

Appendix D. Function Prototypes for the *mathc90* Library

The following tabulation shows prototypes for all user-callable functions of the *mathc90* library, and some low-level functions as well. These prototypes are contained in the file *mathc90.h*.

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void      ccoef(long,float[][2],float[][2]);
void      cdif(float[],float[],float[]);
void      cgam(float[],float[],float*,long);
void      cpolz(float[][2],long,float[][2],float*,long*);
void      cpro(float[],float[],float[]);
void      cquo(float[],float[],float[]);
void      csort(CHAR_INT,long,long,long,long);
void      csort1(char*[],long,long,long,long);
void      csortp(CHAR_INT,long,long,long,long,long[]);
void      csortq(CHAR_INT,long,long,long,long,long[]);
void      csqrtx(float[],float[]);
void      csum(float[],float[],float[]);
void      cwfz(float[],float[],long*);
void      daccum(double*,long,long,double*,long,long,long*,long,long*);
double    dasinh(double);
double    dacosh(double);
double    datanh(double);
double    dactnh(double);
double    dacsch(double);
double    dasech(double);
double    dhyps(double);
double    dhypc(double);
double    dhyph(double);
double    dhyper(double,double);
double    dasum(long,double[],long);
void      daxpy(long,double,double[],long,double[],long);
void      dbacc(double*,long,long,long*,long,long,long*,long*);
double    dbesj0(double);
double    dbesj1(double);
void      dbesjn(double,double,long,double[]);
void      dbesqp(double,double,double*,double*);
double    dbesy0(double);
double    dbesy1(double);
void      dbesyn(double,double,long,double[]);
void      dbi0k0(double,double*,double*,long,long*);
void      dbi1k1(double,double*,double*,long,long*);
double    dbinom(long,long);
void      dblse(double*,long,long,long,long,double[],double[][2],double,long,double,long*,double[],double*,long*,
double[],double[],double[],double[],double[],double[],long[],long[],double[],double[],double[]);
void      dbmp0(double,double*,double*);
void      dbmp1(double,double*,double*);
void      dbsol(long,double*,long,long,long,long,double[],long,double*,long*);
void      dc2bas(double,long,long,LOGICAL32*,double[],long,double[]);
void      dc2fit(double[],double[],double[],long,double[],long,double*,long,double[],double[],double*,long*);
void      dcdchi(double,double,double*,double*,long*);
double    dcdnml(double,double,double);
void      dcdpoi(long,double,double*,double*,long*);
void      dcft(double[],char*,long[],long,long*,double[]);
void      dchol(double*,long,long,double[],double*,double,long*);
double    dci(double);
double    dcin(double);
double    dcii(LOGICAL32,double);
void      dckder(long*,long,long,long,double[],double[],double*,long,double*,long*,long*,double*);
void      dcomqr(long,long,long,long,double*,double*,double[],long*);
void      dconcm(long,double[]);
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void      dconmc(long,double[]);
void      dcopy(long,double[],long,double[],long);
double    dcos1(double);
double    dcoshm(double);
double    dcospx(double);
void      dcov2(double*,long,long,long[],double,long*);
void      dcov3(double*,long,long,double[],double,double[],long*);
void      dcpdrv(double[],long,double[],long*);
void      dcpint(double[],long,double[],long*);
double    dcplte(double);
double    dcpltk(double);
double    dcpval(double[],long,double);
double    dcsevl(double,double[],long);
double    dcshmm(double);
double    dcspxx(double);
void      ddas1(double*,double[],double[],long,long*,void(*) (double*,double[],double[],double[],double[],long*,double*,
        long*,double[],long[]),long[],double*,double[],long*,double*,double[],double[],double[],long[],double[]);
void      ddasco(double*,long,long,double[],double[]);
void      ddasdb(long,long,double,double[],double[],long[],double[],long[],long,double[],double[]);
void      ddasf(double,double[],double[],double[],double[],long,double,long,double[],long[]);
void      ddasgh(double,double,double*,double,double*,double);
void      ddasin(double,double,double[],double[],long,long,double*,double[]);
void      ddasj(long,long*,double*,double[],double[],double[],double,double[],double[],double[],long[],double[],
        void(*) (double*,double[],double[],double[],double[],long*,double*,long*,double[],long[]),long[],long*);
void      ddasls(void(*)(),long,double*,double[],double[],long[],double,double,double*,long*,long,long*,double[],long,
        long[],long);
void      ddaslv(long,long*,double*,double[],double[],double[],void(*) (double*,double[],double[],double[],double[],long*,
        double*,long*,double[],long[]),long[],long[],double[]);
void      ddaslx(void(*)(),long,double*,double[],double[],double,long[],double[],double[],long*,double[],long,long[],long);
double    ddasnm(long,double[],double[],double[],long[]);
void      ddastp(double*,double[],double[],long,long*,void(*) (double*,double[],double[],double[],double[],long*,double*,
        long*,double[],long[]),long[],double*,double[],long*,double*,double[],double[],double[],long[],
        double[],double[],double[],double[],double[],double[],long*);
void      ddaswt(long,long[],double[],double[],double[],double[],double[],long[]);
double    ddot(long,double[],long,double[],long);
double    dei(double);
double    del(double);
void      delefi(double,double,double*,double*,long*);
void      delpii(double,double,double,double*,long*);
double    derf(double);
double    derfc(double);
double    derfce(double);
void      derfsp(LOGICAL32*,double*,double*,double*,double*);
double    derf1(double);
double    derfc1(double);
double    derfe1(double);
double    derfe2(double);
double    derfi(double);
double    derfci(double);
double    derfix(double,long);
void      derm1(char*,long,long,char*,char*,double,byte);
void      derv1(char*,double,byte);
void      devbh(double*,long,long,long*,long*,long[],double[]);
void      devun(double*,long,long,double[],double[],long[]);
void      devvun(double*,long,long,double[],double[],double*,long[],double[]);
void      dcdiv(double,double,double,double,double*,double*);
void      dfft(double[],double[],double[]);
void      dfmin(double*,double*,long*,double);
double    dfrenc(double);

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double  dfrenf(double);
double  dfreng(double);
double  dfrens(double);
double  dfren1(long,double);
double  dgam1(double);
void     dgame(double,double,double*,double*,long*);
void     dgamik(double,double,double,long);
void     dgame(double*);
void     dgamib(void);
double  dgamma(double);
void     dgbfa(double*,long,long,long,long,long[],long*);
void     dgbsl(double*,long,long,long,long,long[],double[],long);
void     dgeco(double*,long,long,long[],double*,double[]);
void     dged(double*,long,long,long[],double[]);
void     dgefa(double*,long,long,long[],long*);
void     dgefs(double*,long,long,double*,long,long,long[],long*);
void     dgefsc(double*,long,long,double*,long,long,long[],double*,double[]);
void     dgei(double*,long,long,long[],double[]);
void     dgemv(byte,long,long,double,double*,long,double[],long,double,double[],long);
void     dgesl(double*,long,long,long[],double[],long);
void     dgesld(double*,long,long,long[],double[]);
void     dgeslt(double*,long,long,long[],double[]);
void     dgr17(double,double,double*);
void     dgr29(double,double,double*);
void     dherql(double*,double*,long,long,double[],double*,double*,double[],long*);
void     dhfti(double*,long,long,long,double*,long,long,double,long*,double[],double[],long[]);
double  dhint(double,long,long,double[],double[],double[]);
void     dhtcc(long,long,long,long,double[],double*,double[],long,long);
void     dhtgen(long,long,long,long,double[],long,LOGICAL32,double*,double[],long,long,LOGICAL32);
void     dilup(double,double*,long,double[],double[],long,long*,long[],double[]);
void     dilupm(long,double[],double*,long[],double[],double[],long[],long[],long[],double[]);
void     dilupmd(long,double[],double,long[],double[],double[],long[],long[],long[],double[]);
void     dimql(double*,long,long,double[],double[],long*);
void     dinit(double[],long,double,long*);
void     dint1(double,double,double*,double[],long[]);
void     dint2(double*,double[],long[]);
void     dintdl(double[]);
void     dintdu(void);
void     dintf(double*,double[],long[]);
void     dintm(long,double*,double[],long,long[]);
void     dintma(double*,double[],long[]);
void     dintns(long);
void     dintol(long,double[]);
void     dintop(long[],double[]);
double  dintsm(double);
void     diva(double[],double[],double[],long[],long,void*)(double[],double[],double[],long[]),void*)(double[],
double[],double[],long[]),long,long,long,long,long[]);
void     divaa(double[],double[],double[],long[],void*)(double[],double[],double[],long[]),void*)(double[],double[],
double[],long[]);
void     divabu(double[],long[]);
void     divaco(long[],double[]);
void     divacr(double[],double[],long[],double[],long[]);
void     divahc(void);
void     divain(double[],double[],double[],long[]);
void     divaop(long[],double[]);
void     divapr(double[],double[],double[],long[]);
void     divadb(long,double[],double[],double[],long[],char*);
void     divag(double[],double[],double[],long[],long*,long*,double[],double[]);
void     divset(long,long[],long,long,double[]);

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void      dv7dff(long,long,double[]);
double    dr7mdc(long);
double    dl7svn(long,double[],double[],double[]);
void      dq7apl(long,long,long,double*,double[],long);
double    dv2nrm(long,double[]);
double    dd7tpr(long,double[],double[]);
void      dd7upd(double[],double*,long[],long,long,long,long,long,long,long,double[]);
void      dq7rad(long,long,long,double[],LOGICAL32,double[],double*,double[]);
void      dparck(long,double[],long[],long,long,long,double[]);
void      ds7lvm(long,double[],double[],double[]);
void      ds7lup(double[],double,long,double,double[],double[],double[],double[],double*,double[]);
void      dl7mst(double[],double[],long,long[],long*,long,double[],double[],double[],double[],double[]);
void      dg7qts(double[],double[],double[],long*,double[],long,double[],double[],double[]);
void      dl7ivm(long,double[],double[],double[]);
double    dl7svx(long,double[],double[],double[]);
void      da7sst(long[],long,long,double[]);
void      ditsum(double[],double[],long[],long,long,long,double[],double[]);
void      dl7itv(long,double[],double[],double[]);
void      dl7sqr(long,double[],double[]);
void      dl7srt(long,long,double[],double[],long*);
void      dl7tvm(long,double[],double[],double[]);
void      dl7vml(long,double[],double[],double[]);
double    drldst(long,double[],double[],double[]);
void      dv2axy(long,double[],double,double[],double[]);
void      dv7cpy(long,double[],double[]);
void      dv7scl(long,double[],double,double[]);
void      dv7scp(long,double[],double);
void      djacg(long*,long,long,double[],double[],double*,long,double[],double[],long[],double[],long,long[],long);
void      dlasum(double,long,double[],double*);
void      dlesum(double,long,double[],double*);
double    dlgamma(double);
double    drat1(double);
double    dlnrel(double);
void      dmatp(double*,long,long,long,char*);
void      dmatpr(double*,long,long,long,char*,long,long,long);
void      dmess(long[],CHAR_INT,long[],double[]);
void      void(*) (long,double[],double*,double[],LOGICAL32*),long,long,long,double*,long,double[],double[],double[],
double[],double,long,long,long[],long,double[],long);
void      void(*) (long,double[],double*,double[],LOGICAL32*),long,long,long,double*,long,double[],double[],double[],
double[],double,long[],long*,double[],long,long,long*,long*,long*,double[],double[],double[],
double[],double[],double*,double[],double[],double[],double[],double[],double[],double*,double[]);
void      dmlc03(long,long,long,double*,long,double[],double[],long[],long*,long*,double[],double[],double,double[],double[]);
void      dmlc04(long,long,double*,long,double[],double[],double[],double[],long[],long*,double[],double[],long*,double[],
double[],double[],double[],double,double*,long,long*,long,double[],double[],double[],double[],
double[],double[],double[],double[]);
void      void(*) (long,double[],double*,double[],LOGICAL32*),long,long,double*,long,double[],double[],double[],
double[],double,long[],long*,double[],long,long,long,long*,double[],double[],double[],
double[],double,double*,double,long,long,long*,long*,long*,long,double[],double*,double[],
double[],double[],double[],double[],double[],double*,long*,LOGICAL32*,double[]);
void      dmlc06(long,long,double*,long,double[],double[],double[],double[],long[],long*,double[],double[],double[],
double[],double[],double[],double[],double[],double,double,double*,double*,long,long*,long,long*,
double[],double[],double[],double[],double[]);
void      dmlc07(long,long,double*,long,long[],long*,double[],double[],double[],double[],double[],double[],double,
double*,long,long,double[],double[],double[],double[]);
void      dmlc08(long,long,double*,long,long[],long*,double[],double[],double[],double[],double[],double[],double,
double*,long,long,double[],double[],double[]);
void      void(*) (long,double[],double*,double[],LOGICAL32*),long,double[],double[],double[],double[],double[],
double,double,double,double*,double*,long*,long,double[],double[],double[],long*,double[]);
void      dmlc10(long,long,double*,long,long[],long*,double[],double[],double[],double[],double,long,double[],double[],double[]);

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void      dmlc11(long,long,double*,long,double[],double[],double[],double[],long[],long*,long*,double[],double[],
               double[],double,double,long);
void      dmlc12(long,long,double*,long,long[],long*,double[],double[],double,long,double[],double[]);
void      dmlc13(long,long,double*,long,double[],double[],double[],double[],long[],long,double[],double,double*,long);
void      dmlc14(long,long,double*,long,long[],long*,double[],double[],double,long);
void      dmlc15(long,long,double[],double[],double[],long[],long*,long*,double[],double[],double[],double*);
void      dmlc16(long,long,double*,long,long[],long,double[],double[],double[],double[],double[],double[],double*,long,
               double*,double[],double[]);
void      dmlc17(long,long,double[],double[],double[],double[],double,double*);
void      dmlc18(long,long,double*,long,long[],double[],double[],double*,double*,long,long*,long,long*);
void      dmlc19(long,double[],long,double[],double[],double[],double[],double[],double*);
void      void(*) (long,double[],double*,double[],LOGICAL32*),long,double[],double,double[],double[],double[],long*,
               long*,double[]);
void      dmlc21(long,LOGICAL32,long,long,long,double,double,double[],double[],long,long[],double[],double);
void      dmpdrv(double[],long,double[],long*);
void      dmpint(double[],long,double[],long*);
double    dmpval(double[],long,double);
void      dnlafe(long,long,double[],double[] [2],void(*) (long,long,double[],long*,double[]),long[],long,long,double[]);
void      dnlafe(long,long,double[],void(*) (long,long,double[],long*,double[]),long[],long,long,double[]);
void      dnlagb(long,long,double[],double[] [2],void(*) (long,long,double[],long*,double[]),void(*) (long,long,double[],
               long*,double[]),long[],long,long,double[]);
void      dnlagu(long,long,double[],void(*) (long,long,double[],long*,double[]),void(*) (long,long,double[],long*,
               double[]),long[],long,long,double[]);
void      dnlsfb(long,long,long,double[],double[] [2],double[],double[],void(*) (long,long,long,double[],long*,double[]),
               long*,long,long[],long,long,double[]);
void      dnlsfu(long,long,long,double[],double[],double[],void(*) (long,long,long,double[],long*,double[]),long*,long,
               long[],long,long,double[]);
void      dnlsqb(long,long,long,double[],double[] [2],double[],double[],void(*) (long,long,long,double[],long*,double[]),
               void(*) (long,long,long,double[],long*,double[]),long*,long,long[],long,long,double[]);
void      dnlsqu(long,long,long,double[],double[],double[],void(*) (long,long,long,double[],long*,double[]),void(*) (long,
               long,long,double[],long*,double[]),long*,long,long[],long,long,double[]);
void      void(*) (long,double[],double[],double*,long*),long,double[],double[],double,long[],double[],long);
void      void(*) (long,double[],double[],double*,long*),long,double[],double[],double,long*,long*,long*,long,
               LOGICAL32,long,LOGICAL32,long,long,double,double,LOGICAL32,double*,double[],double[],
               double[],double[],double[],double[],double[],double*,double[]);
void      void(*) (long,double[],double[],double*,long*),long,double[],double[],double*,long,long*,long,long,double,
               double[],double[]);
void      dnqaa(long,long,double*,long,double[],double[]);
void      dnqdog(long,double[],long,double[],double[],double,double[],LOGICAL32*,double[],double[],LOGICAL32,double[]);
void      dnqqfm(long,long,double*,long,double[]);
void      dnqqrf(long,long,double*,long,LOGICAL32,long[],long,double[],double[],double[]);
void      dnqupd(long,long,double[],long,double[],double[],double[],LOGICAL32*);
double    dnrm2(long,double[],long);
void      dpfit(long,double[],double[],double[],long,LOGICAL32,LOGICAL32,LOGICAL32,double[],long*,double*,double*);
void      dplot(double,double,double[],long,double[],double[],STRING);
void      dplota(long);
void      dplote(long,double[],STRING);
void      dplotf(long,double[],double[],double[]);
void      dplotn(double,long,double[]);
void      dplott(long,double[]);
void      dplotr(double[],long,long,long);
void      dplot0(void);
void      dplot1(void);
void      dplot2(double,double,double,double);
void      dplot4(double,double,char*,char*);
void      dplot5(double,double,double,double);
void      dplot6(double,double,double,double,double);
void      dplot7(long*,long[],double[]);
void      dplot8(double,double,double,double,double,double,double,long,double);

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void    dplot9(void);
void    dplotl(long,double[],double[]);
void    dplots(double[],long);
void    dpolz(double[],long,double[],double*,long*);
void    dpolz2(double[],double[]);
double  dppnml(double,double,double);
double  dpquad(long,long,double[],double*,double,double);
void    dprpl(double,byte,byte[],long,double,double,LOGICAL32);
void    dprpl1(double[],double[],long,char*,char*,char*,long,long,byte[],long*);
void    dprpl2(double*,long,long,long[],long[],long[],byte[],char*,char*,char*,long,long,byte[],long*);
void    dprpl3(double,double,double,double,double*,double*,double*,double*,long*,long*,long*,long*,char*,char*,char*,
    long,long,byte[],long*);
void    dprpl4(double,double,double*,double*,long*,long*,byte[6],long*,long*);
void    dprpl5(double,double,long,byte[6],long,long,long,long,byte[]);
void    dprtsv(double*,long,long,long,CHAR_INT,long,long,long);
double  dpsi(double);
void    dpsik(double,double,long);
void    dpsie(double*,long*);
void    dpsib(void);
double  dpval(long,long,double[],double*,double,long);
void    dq7rfh(long*,long[],long,long,long,long,double*,double[],long,double[]);
void    ds7cpr(double[],long[],long,long);
void    dv7prm(long,long[],double[]);
void    dv7swp(long,double[],double[]);
void    dqrbd(long*,double[],double[],long,double*,long,long,double*,long,long);
double  drane(double);
double  drang(void);
void    drangv(double*,long,long,double[],double[],LOGICAL32*,long*);
double  dranr(double);
double  dranu(void);
double  drcomp(double,double);
void    drcval(double,double,double*,long*);
void    drdval(double,double,double,double*,long*);
double  drexp(double);
void    drft(double[],byte,long[],long,long*,double[]);
void    drft1(double[],byte,long,long*,double[]);
void    drfval(double,double,double,double*,long*);
void    drfvlx(double,double,double,double*);
void    drjval(double,double,double,double,double*,long*);
double  drlog(double);
double  drlog1(double);
double  drlog2(double);
void    drn2g(double[],double*,long[],long,long,long,long,long*,long*,long,double[],double[],double[],double[]);
void    dg7lit(double[],double[],long[],long,long,long,long,long,double[],double[],double[]);
void    dn2lrd(double*,long[],double[],long,long,long,long,long,long,double[],double[],double[]);
void    dc7vfn(long[],double[],long,long,long,long,long,long,double[]);
void    df7hes(double[],double[],long*,long[],long,long,long,double[],double[]);
void    dn2cvp(long[],long,long,long,double[]);
void    dn2rdp(long[],long,long,double[]);
void    do7prd(long,long,long,double[],double[],double*,double*);
void    dl7nvr(long,double[],double[]);
void    dl7tsq(long,double[],double[]);
void    drn2gb(double[][2],double[],double*,long[],long,long,long,long,long*,long*,long,double[],double[],double[],double[]);
void    dg7itb(double[][2],double[],double[],long[],long,long,long,long,double[],double[],double[]);
void    dr7tvm(long,long,double[],double[],double*,double[]);
void    df7dhh(double[][2],double[],double[],long*,long[],long,long,long,double[],double[]);
double  dh2rfg(double,double,double*,double*,double*);
void    dh2rfa(long,double[],double[],double,double,double);
void    dg7qsb(double[][2],double[],double[],double[],long[],long[],long[],long*,double[],long,long,long*,long,double*,

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        double[],double[],double[],double[],double[],double[]);
void    dl7msb(double[][2],double[],double[],long,long[],long[],long[],long*,double[],long,long,long*,long,double[],
        double[],double*,double[],double[],double[],double[],double[],double[],double[]);
void    ds7bqn(double[][2],double[],double[],long[],long[],long[],long*,double[],long,long*,long,long*,double[],
        double[],double[],double[],double[],double[],double[]);
void    dq7rsh(long,long,LOGICAL32,double[],double[],double[]);
void    dv7vmp(long,double[],double[],double[],long);
void    dv7ipr(long,long[],double[]);
void    dv7shf(long,long,double[]);
void    ds7ipr(long,long[],double[]);
void    dd7mlp(long,double[],double[],double[],long);
void    ds7dmp(long,double[],double[],double[],long);
void    drnsg(double*,double[],double[],double*,long[][2],long[],long,long,long,long,long,long,long,long,double[],double[]);
void    drnsgb(double*,double[],double[][2],double[],double*,long[][2],long[],long,long,long,long,long,long,long,long,
        double[],double[]);
void    drot(long,double[],long,double[],long,double,double);
void    drotg(double*,double*,double*,double*);
void    drotm(long,double[],long,double[],long,double[]);
void    drotmg(double*,double*,double*,double,double[]);
void    dsbasd(long,long,double[],double,long,double[]);
void    dsbasi(long,long,double[],double,double,long*,long*,double[]);
void    dscal(long,double,double[],long);
void    dsdif(long,long,double[],double[],long,double*);
double  dsdot(long,float[],long,float[],long);
void    dsfind(double[],long,long,double,long*,long*);
void    dsfit(double[],double[],double[],long,long,long,double[],double[],double*,long*,long,double*);
void    dsfite(byte[][5],double[],double[],double[],long,long,double[],double[],double*,long[],long[],double[]);
double  dsi(double);
double  dsin1(double);
double  dsinhm(double);
double  dsinpx(double);
double  dsnpxx(double);
void    dsort(double[],long,long);
void    dsortp(double[],long,long,long[]);
void    dsortq(double[],long,long,long[]);
void    dspge(long,long[],long[],double[],double[],double[]);
double  dsquad(long,long,double[],double[],double,double);
void    dstat1(double[],long,double[],long[],long,double,double);
void    dstat2(double[],long[],long,double,double);
void    dstop(long,long,double[],double[],double*,long*,double[],double*);
void    dsva(double*,long,long,long,long,double[],double[],long[],CHAR_INT,long,double[],double[]);
double  dsvala(long,long,double[],double[],double,long);
void    dsvala(long,long,double[],long,double*,double,double[]);
void    dsvdrs(double*,long,long,long,double*,long,long,double[],double[]);
void    dswap(long,double[],long,double[],long);
void    dsymql(double*,long,long,double[],double[],long*);
void    dtcst(double[],char*,char*,long[],long,long*,double[]);
void    dtgc0(double[][3],double*,LOGICAL32,double[]);
void    dtgc1(LOGICAL32,double[][3],double*,LOGICAL32,double[]);
void    dtgext(double[],double[],double[],double[][2],long[],long[][4],long,long,double[],long,long,double*,
        LOGICAL32,double[]);
void    dtgqs(double[],long[],double[],double[],double[][3]);
void    dtgfi(double[],double[],double[],double[][2],long[],long,long[][4-(1+1)],long,long,double[],double*,
        LOGICAL32,double[],long*,double[]);
void    dtgfind(double[],double[],long[],long,double[],long*,long[],double[][3],long*);
void    dtggrd(double[],double[],long,long[],double[],long[],long,long[][4],long,long*,long[]);
void    dtgupd(long,long,long[],long[],long,long);
double  dtgang(double,double,double);
void    dtgadj(long,long,double[],double[],long,long[],long,long[][4],long,long,LOGICAL32*);

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void dtgpd(double[],double[],double[],double[][2],long,long[],long,long[]);
void dtgmor(double[],double[],double[],long,long[],double[][21]);
void dtgls(double[][21],long,long,LOGICAL32*,long,double*,double*);
void dtgprg(double[],double[],long,long[],long[][4],long,long);
void dtgrec(double[],double[],double[],double[][2],long,long[],long,long[][4],long,double[],long,long,double,
double*,long,long,long,LOGICAL32,double*);
void dtgset(long,long,long,long,long,long,long,long[],long);
void dtgget(long,long[],long[]);
void dtgput(long,long[],long[],long);
void dtgsiz(long,long*);
void dtrc2c(double[],long,double[],double[],double[]);
void dusetn(long,long,long);
void dugetn(long*,long*,long*,long*,long*);
void duset(double,long,double[]);
void dupro(double[],double[],double[]);
void duquo(double[],double[],double[]);
void dusum(double[],double[],double[]);
void dudif(double[],double[],double[]);
void dusum1(double,double[],double[]);
void dudif1(double,double[],double[]);
void dupro1(double,double[],double[]);
void duquo1(double,double[],double[]);
void dusqrt(double[],double[]);
void duexp(double[],double[]);
void dulog(double[],double[]);
void dupwri(long,double[],double[]);
void dusin(double[],double[]);
void ducos(double[],double[]);
void dusinh(double[],double[]);
void ducosh(double[],double[]);
void duatan(double[],double[]);
void duatn2(double[],double[],double[]);
void duasin(double[],double[]);
void duacos(double[],double[]);
void duacs(LOGICAL32,double[],double[]);
void dutan(double[],double[]);
void dutanh(double[],double[]);
void durev(double*,double*,long,double*,long[],double*);
void dvecp(double[],long,char*);
void dvecpr(double[],long,char*,long,long,long);
void dwatan(long,double[],double[]);
void dwasin(long,double[],double[]);
void dwacos(long,double[],double[]);
void dwacsi(long,double[],double[],LOGICAL32);
void dwatn2(long,double[],double[],double[]);
void dwsum(long,double[],double[],double[]);
void dwdif(long,double[],double[],double[]);
void dwsqrt(long,double[],double[]);
void dwexp(long,double[],double[]);
void dwsin(long,double[],double[]);
void dwcos(long,double[],double[]);
void dwtan(long,double[],double[]);
void dwsinh(long,double[],double[]);
void dwcosh(long,double[],double[]);
void dwtanh(long,double[],double[]);
void dwset(long,double,double,double[]);
void dwsum1(long,double,double[],double[]);
void dwdif1(long,double,double[],double[]);
void dwpro1(long,double,double[],double[]);

```



```

void      dwquo1(long,double,double[],double[]);
void      dwlog(long,double[],double[]);
void      dwpwri(long,long,double[],double[]);
void      dwchn(long,double[],double[]);
void      dwrchn(long,double[],double[]);
void      dwpro(long,double[],double[],double[]);
void      dwquo(long,double[],double[],double[]);
void      dpascl(long,double[]);
double    dxparg(long);
void      dxrk8(double[],double[],double[],long[],double[],double[]);
void      dxrk8a(double[],double[],double[],long[],double[],double[]);
void      dxrk8i(double,double[],long[],double[]);
void      dxrk8n(long[],double[],double[],double[],double[],double[],double[]);
double    dxrk8x(double,double,double,double);
void      dxrk8f(double*,double[],double[],long[]);
void      dxrk8g(double[],double[],double[],long[]);
void      dxrk8o(double[],double[],long[],double[]);
double    dzabs(double[]);
void      dzero(double*,double*,double*,double*,long*,double);
void      erfin(void);
void      ermor(char*,byte);
void      ermsg(char*,long,long,char*,byte);
void      ermset(long);
void      void(*) (long,long,long,long*),long,long[],long,long*);
void      long(*) (long,long),long,long[]);
void      i7copy(long,long[],long[]);
void      i7pnvr(long,long[],long[]);
void      i7shift(long,long,long[]);
long      idamax(long,double[],long);
long      idranp(double);
void      idsm(long,long,long,long[],long[],long[],long*,long*,long*,long[],long[],long[],long,long[]);
void      i7rtdt(long,long,long[],long[],long[],long[]);
void      is7etr(long,long,long[],long[],long[],long[],long[]);
void      id7egr(long,long[],long[],long[],long[],long[],long[],long[]);
void      m7slo(long,long[],long[],long[],long[],long[],long*,long[],long[],long[],long[],long[]);
void      m7seq(long,long[],long[],long[],long[],long[],long*,long[],long[]);
void      i7do(long,long,long[],long[],long[],long[],long[],long*,long[],long[],long[],long[],long[]);
void      n7msrt(long,long,long[],long,long[],long[],long[]);
void      idsta1(long[],long,long[],double[],long[],long,long);
void      idsta2(long[],double[],long[],long,long);
void      ierm1(char*,long,long,char*,char*,long,byte);
void      ierv1(char*,long,byte);
void      imatp(long*,long,long,long,char*);
void      imatpr(long*,long,long,long,char*,long,long);
void      long(*) (long,long),long,long[],long*);
void      void(*) (long,long,long,long*),long,long[],long*);
long      isamax(long,float[],long);
void      isort(long[],long,long);
void      isortp(long[],long,long,long[]);
void      isortq(long[],long,long,long[]);
long      isranp(float);
void      issta1(long[],long,long[],float[],long[],long,long);
void      issta2(long[],float[],long[],long,long);
void      ivecpr(long[],long,char*);
void      ivecpr(long[],long,char*,long,long);
LOGICAL32 lsame(byte,byte);
void      mess(long[],CHAR_INT,long[]);
void      messfd(long[]);
void      messfi(void);

```

```

void    messmh(CHAR_INT); void messpr(void);
void    messft(long[],char*);
void    optchk(long[],long[],char*);
void    pvec(long[],long);
void    ran1(void);
void    ran0(void);
void    ranput(long[]);
void    rn1(void);
void    ransiz(long*);
void    rnput(long[]);
void    ranget(long[]);
void    rn2(long*);
void    sranua(float[],long);
void    dranua(double[],long);
void    sranus(float[],long,float,float);
void    dranus(double[],long,double,double);
void    ranmod(void);
void    saccum(float*,long,long,float*,long,long,long*,long,long*);
float    sasinh(float);
float    sacosh(float);
float    satanh(float);
float    sactnh(float);
float    sacsch(float);
float    sasech(float);
float    shyps(float);
float    shypc(float);
float    shyph(float);
float    shyper(float,float);
float    sasum(long,float[],long);
void    saxpy(long,float,float[],long,float[],long);
void    sbacc(float*,long,long,long*,long,long,long*,long*);
float    sbesj0(float);
float    sbesj1(float);
void    sbesjn(float,float,long,float[]);
void    sbespq(float,float,float*,float*);
float    sbesy0(float);
float    sbesy1(float);
void    sbesyn(float,float,long,float[]);
void    sbi0k0(float,float*,float*,long,long*);
void    sbi1k1(float,float*,float*,long,long*);
float    sbinom(long,long);
void    sblse(float*,long,long,long,long,float[],float[][2],float,long,float,long*,float[],float*,long*,float[],
    float[],float[],float[],float[],float[],long[],long[],float[],float[],float[]);
void    sbmp0(float,float*,float*);
void    sbmp1(float,float*,float*);
void    sbisol(long,float*,long,long,long,long,long,float[],long,float*,long*);
void    sc2bas(float,long,long,LOGICAL32*,float[],long,float[]);
void    sc2fit(float[],float[],float[],long,float[],long,float*,long,float[],float[],float*,long*);
float    scabs(float[]);
void    scdchi(float,float,float*,float*,long*);
float    scdnml(float,float,float);
void    scdpoi(long,float,float*,float*,long*);
void    scft(float[],char*,long[],long,long*,float[]);
void    schol(float*,long,long,float[],float*,float,long*);
float    sci(float);
float    scin(float);
float    scii(LOGICAL32,float);
void    sckder(long*,long,long,long,float[],float[],float*,long,float*,long*,long*,float*);
void    scomqr(long,long,long,long,float*,float*,float[],long*);

```

```

void sconcm(long,float[]);
void sconmc(long,float[]);
voidscopy(long,float[],long,float[],long);
float scos1(float);
float scoshm(float);
float scospx(float);
void scov2(float*,long,long,long[],float,long*);
void scov3(float*,long,long,float[],float,float[],long*);
void scpdrv(float[],long,float[],long*);
void scpint(float[],long,float[],long*);
float scplte(float);
float scpltk(float);
float scpval(float[],long,float);
float scsevl(float,float[],long);
float scshmm(float);
float scspxx(float);
void sdas1(float*,float[],float[],long,long*,void*)(float*,float[],float[],float[],float[],long*,float*,long*,
    float[],long[]),long[],float*,float[],long*,float*,float[],float[],float[],long[],float[]);
void sdasco(float*,long,long,float[],float[]);
void sdasdb(long,long,float,float[],float[],long[],float[],long[],long,float[],float[]);
void sdasf(float,float[],float[],float[],float[],long,float,long,float[],long[]);
void sdasgh(float,float,float*,float,float*,float);
void sdasin(float,float,float[],float[],long,long,float*,float[]);
void sdasj(long,long*,float*,float[],float[],float[],float,float[],float[],float[],long[],float[],void*)(float*,
    float[],float[],float[],float[],long*,float*,long*,float[],long[]),long[],long*);
void sdasls(void(*)(),long,float*,float[],float[],long[],float,float,float*,long*,long*,float[],long,long[],long);
void sdaslv(long,long*,float*,float[],float[],float[],void*)(float*,float[],float[],float[],float[],long*,float*,
    long*,float[],long[]),long[],long[],float[]);
void sdaslx(void(*)(),long,float*,float[],float[],float,long[],float[],float[],long*,float[],long,long[],long);
float sdasnm(long,float[],float[],float[],long[]);
void sdastp(float*,float[],float[],long,long*,void*)(float*,float[],float[],float[],float[],long*,float*,long*,
    float[],long[]),long[],float*,float[],long*,float*,float[],float[],float[],long[],float[],float[],
    float[],float[],float[],float[],long*);
void sdaswt(long,long[],float[],float[],float[],float[],float[],long[]);
float sdot(long,float[],long,float[],long);
float sdsdot(long,float,float[],long,float[],long);
float sei(float);
float sel(float);
void selefi(float,float,float*,float*,long*);
void selpii(float,float,float,float*,long*);
float serf(float);
float serfc(float);
float serfce(float);
void serfsp(LOGICAL32*,float*,float*,float*,float*);
float serfl(float);
float serfc1(float);
float serfel(float);
float serfe2(float);
float serfi(float);
float serfci(float);
float serfix(float,long);
void serm1(char*,long,long,char*,char*,float,byte);
void serv1(char*,float,byte);
void sevbh(float*,long,long,long*,long*,long[],float[]);
void sevun(float*,long,long,float[],float[],long[]);
void sevvun(float*,long,long,float[],float[],float*,long[],float[]);
void sdiv(float,float,float,float,float*,float*);
void sfft(float[],float[],float[]);
void sfmin(float*,float*,long*,float);

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```

float  sfrenc(float);
float  sfrenf(float);
float  sfreng(float);
float  sfrens(float);
float  sfrenl(long,float);
float  sgaml(float);
void    sgami(float,float,float*,float*,long*);
void    sgamik(float,float,float,long);
void    sgamie(float*);
void    sgamib(void);
float  sgamma(float);
void    sgbfa(float*,long,long,long,long,long[],long*);
void    sgbsl(float*,long,long,long,long,long[],float[],long);
void    sgeco(float*,long,long,long[],float*,float[]);
void    sged(float*,long,long,long[],float[]);
void    sgefa(float*,long,long,long[],long*);
void    sgefs(float*,long,long,float*,long,long,long[],long*);
void    sgefsc(float*,long,long,float*,long,long,long[],float*,float[]);
void    sgei(float*,long,long,long[],float[]);
void    sgemv(byte,long,long,float,float*,long,float[],long,float,float[],long);
void    sgesl(float*,long,long,long[],float[],long);
void    sgesld(float*,long,long,long[],float[]);
void    sgeslt(float*,long,long,long[],float[]);
void    sgr17(float,float,float*);
void    sgr29(float,float,float*);
void    sherql(float*,float*,long,long,float[],float*,float*,float[],long*);
void    shfti(float*,long,long,long,float*,long,long,float,long*,float[],float[],long[]);
float  shint(float,long,long,float[],float[],float[]);
void    shtcc(long,long,long,long,float[],float*,float[],long,long);
void    shtgen(long,long,long,long,float[],long,LOGICAL32,float*,float[],long,long,LOGICAL32);
void    silup(float,float*,long,float[],float[],long,long*,long[],float[]);
void    silupm(long,float[],float*,long[],float[],float[],long[],long[],long[],float[]);
void    silupmd(long,float[],float,long[],float[],float[],long[],long[],long[],float[]);
void    simql(float*,long,long,float[],float[],long*);
void    sinits(float[],long,float,long*);
void    sint1(float,float,float*,float[],long[]);
void    sinta(float*,float[],long[]);
void    sintdl(float[]);
void    sintdu(void);
void    sintf(float*,float[],long[]);
void    sintm(long,float*,float[],long,long[]);
void    sintma(float*,float[],long[]);
void    sintns(long);
void    sinto(long,float[]);
void    sintop(long[],float[]);
float  sintsm(float);
void    siva(float[],float[],float[],long[],long,void*)(float[],float[],float[],long[]),void*)(float[],float[],
    float[],long[]),long,long,long,long,long[]);
void    sivaa(float[],float[],float[],long[],void*)(float[],float[],float[],long[]),void*)(float[],float[],float[],long[]);
void    sivabu(float[],long[]);
void    sivaco(long[],float[]);
void    sivacr(float[],float[],long[],float[],long[]);
void    sivahe(void);
void    sivain(float[],float[],float[],long[]);
void    sivaop(long[],float[]);
void    sivapr(float[],float[],float[],long[]);
void    sivadb(long,float[],float[],float[],long[],char*);
void    sivag(float[],float[],float[],long[],long*,long*,float[],float[]);
void    sivset(long,long[],long,long,float[]);

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```

void    sv7dfl(long,long,float[]);
float   sr7mdc(long);
float   sl7svn(long,float[],float[],float[]);
void    sq7apl(long,long,long,float*,float[],long);
float   sv2nrm(long,float[]);
float   sd7tpr(long,float[],float[]);
void    sd7upd(float[],float*,long[],long,long,long,long,long,long,long,float[]);
void    sq7rad(long,long,long,float[],LOGICAL32,float[],float*,float[]);
void    sparck(long,float[],long[],long,long,long,float[]);
void    ss7lvm(long,float[],float[],float[]);
void    ss7lup(float[],float,long,float,float[],float[],float[],float[],float*,float[]);
void    sl7mst(float[],float[],long,long[],long*,long,float[],float[],float[],float[],float[]);
void    sg7qts(float[],float[],float[],long*,float[],long,float[],float[],float[]);
void    sl7ivm(long,float[],float[],float[]);
float   sl7svx(long,float[],float[],float[]);
void    sa7sst(long[],long,long,float[]);
void    sitsum(float[],float[],long[],long,long,long,float[],float[]);
void    sl7itv(long,float[],float[],float[]);
void    sl7sqr(long,float[],float[]);
void    sl7srt(long,long,float[],float[],long*);
void    sl7tvm(long,float[],float[],float[]);
void    sl7vml(long,float[],float[],float[]);
float   srlDst(long,float[],float[],float[]);
void    sv2axy(long,float[],float,float[],float[]);
void    sv7cpy(long,float[],float[]);
void    sv7scl(long,float[],float,float[]);
void    sv7scp(long,float[],float);
void    sjacg(long*,long,long,float[],float[],float*,long,float[],float[],long[],float[],long,long[],long);
void    slasum(float,long,float[],float*);
void    slesum(float,long,float[],float*);
float   slgamma(float);
float   srat1(float);
float   slnrel(float);
void    smatp(float*,long,long,long,char*);
void    smatpr(float*,long,long,long,char*,long,long,long);
void    smess(long[],CHAR_INT,long[],float[]);
void    void(*) (long,float[],float*,float[],LOGICAL32*),long,long,long,float*,long,float[],float[],float[],float[],long,long,long[],long,float[],long);
void    void(*) (long,float[],float*,float[],LOGICAL32*),long,long,long,float*,long,float[],float[],float[],float[],float,long[],long*,float[],long,long,long*,long*,long*,float[],float[],float[],float[],float[],float*,float[]);
void    smlc03(long,long,long,float*,long,float[],float[],long[],long*,long*,float[],float[],float,float[],float[]);
void    smlc04(long,long,long,float*,long,float[],float[],float[],float[],long[],long*,float[],long*,float[],float[],float[],float[],float*,float*,long,long*,long,float[],float[],float[],float[],float[],float[],float[]);
void    void(*) (long,float[],float*,float[],LOGICAL32*),long,long,float*,long,float[],float[],float[],float[],float,long[],long*,float[],long,long,long,long,long*,float[],float[],float[],float[],float*,float,long,long,long*,long*,long*,long,float[],float*,float[],float[],float[],float[],float[],float*,long*,LOGICAL32*,float[]);
void    smlc06(long,long,float*,long,float[],float[],float[],float[],long[],long*,float[],float[],float[],float[],float[],float[],float[],float*,long,long*,long,long*,float[],float[]);
void    smlc07(long,long,float*,long,long[],long*,float[],float[],float[],float[],float[],float[],float*,float*,long,long,float[],float[],float[]);
void    smlc08(long,long,float*,long,long[],long*,float[],float[],float[],float[],float[],float[],float*,float*,long,long,float[],float[],float[]);
void    void(*) (long,float[],float*,float[],LOGICAL32*),long,float[],float[],float[],float[],float[],float,float*,float*,float*,long*,long,float[],float[],float[],long*,float[]);
void    smlc10(long,long,float*,long,long[],long*,float[],float[],float[],float[],long,float[],float[],float[]);

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void    smlc11(long,long,float*,long,float[],float[],float[],float[],long[],long*,long*,float[],float[],float[],float,
            float,long);
void    smlc12(long,long,float*,long,long[],long*,float[],float[],float,long,float[],float[]);
void    smlc13(long,long,float*,long,float[],float[],float[],float[],long[],long,float[],float,float*,long);
void    smlc14(long,long,float*,long,long[],long*,float[],float[],float,long);
void    smlc15(long,long,float[],float[],float[],long[],long*,long*,float[],float[],float[],float*);
void    smlc16(long,long,float*,long,long[],long,float[],float[],float[],float[],float[],float*,long,float*,
            float[],float[]);
void    smlc17(long,long,float[],float[],float[],float[],float,float*);
void    smlc18(long,long,float*,long,long[],float[],float[],float*,float*,long,long*,long,long*);
void    smlc19(long,float[],long,float[],float[],float[],float[],float*,float*);
void    void(*) (long,float[],float*,float[],LOGICAL32*),long,float[],float,float[],float[],float[],long*,long*,float[]);
void    smlc21(long,LOGICAL32,long,long,long,float,float,float[],float[],long,long[],float[],float[],float);
void    smpdrv(float[],long,float[],long*);
void    smpint(float[],long,float[],long*);
float   smpval(float[],long,float);
void    snlafb(long,long,float[],float[][2],void(*) (long,long,float[],long*,float[]),long[],long,long,float[]);
void    snlafu(long,long,float[],void(*) (long,long,float[],long*,float[]),long[],long,long,float[]);
void    snlagb(long,long,float[],float[][2],void(*) (long,long,float[],long*,float[]),void(*) (long,long,float[],long*,
            float[]),long[],long,long,long,float[]);
void    snlagu(long,long,float[],void(*) (long,long,float[],long*,float[]),void(*) (long,long,float[],long*,float[]),
            long[],long,long,long,float[]);
void    snlsfb(long,long,long,float[],float[][2],float[],float[],void(*) (long,long,long,float[],long*,float[]),long*,
            long,long[],long,long,long,float[]);
void    snlsfu(long,long,long,float[],float[],float[],void(*) (long,long,long,float[],long*,float[]),long*,long,long[],
            long,long,long,float[]);
void    snlsgb(long,long,long,float[],float[][2],float[],float[],void(*) (long,long,long,float[],long*,float[]),
            void(*) (long,long,long,float[],long*,float[]),long*,long,long[],long,long,long,float[]);
void    snlsgu(long,long,long,float[],float[],float[],void(*) (long,long,long,float[],long*,float[]),void(*) (long,long,
            long,float[],long*,float[]),long*,long,long[],long,long,long,float[]);
void    void(*) (long,float[],float[],float*,long*),long,float[],float[],float,long[],float[],long);
void    void(*) (long,float[],float[],float*,long*),long,float[],float[],float,long*,long*,long*,long,LOGICAL32,
            long,LOGICAL32,long,long,float,float,LOGICAL32,float*,float[],float[],float[],float[],
            float[],float[],float[],float*,float[]);
void    void(*) (long,float[],float[],float*,long*),long,float[],float[],float*,long,long*,long,long,long,float,float[],float[]);
void    snqaq(long,long,float*,long,float[],float[]);
void    snqdog(long,float[],long,float[],float[],float,float[],LOGICAL32*,float[],float[],LOGICAL32,float[]);
void    snqqfm(long,long,float*,long,float[]);
void    snqqrf(long,long,float*,long,LOGICAL32,long[],long,float[],float[],float[]);
void    snqupd(long,long,float[],long,float[],float[],float[],LOGICAL32*);
float   snrm2(long,float[],long);
void    spfit(long,float[],float[],float[],long,LOGICAL32,LOGICAL32,LOGICAL32,float[],long*,float*,float*);
void    splot(float,float,float[],long,float[],float[],STRING);
void    splota(long);
void    splote(long,float[],STRING);
void    splotf(long,float[],float[],float[]);
void    splotn(float,long,float[]);
void    splott(long,float[]);
void    splotr(float[],long,long,long);
void    splot0(void);
void    splot1(void);
void    splot2(float,float,float,float);
void    splot4(float,float,char*,char*);
void    splot5(float,float,float,float);
void    splot6(float,float,float,float,float);
void    splot7(long*,long[],float[]);
void    splot8(float,float,float,float,float,float,long,float);
void    splot9(void);
void    splotl(long,float[],float[]);

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void    splots(float[],long);
void    spolz(float[],long,float[],float*,long*);
void    spolz2(float[],float[]);
float   sppnml(float,float,float);
float   spquad(long,long,float[],float*,float,float);
void    sprpl(float,byte,byte[],long,float,float,LOGICAL32);
void    sprpl1(float[],float[],long,char*,char*,char*,long,long,byte[],long*);
void    sprpl2(float*,long,long,long[],long[],long[],byte[],char*,char*,char*,long,long,byte[],long*);
void    sprpl3(float,float,float,float,float*,float*,float*,float*,long*,long*,long*,long*,char*,char*,char*,long,long,
    byte[],long*);
void    sprpl4(float,float,float*,float*,long*,long*,byte[6],long*,long*);
void    sprpl5(float,float,long,byte[6],long,long,long,long,byte[]);
void    sprtsv(float*,long,long,long,CHAR_INT,long,long,long);
float   spsi(float);
void    spsik(float,float,long);
void    spsie(float*,long*);
void    spsib(void);
float   spval(long,long,float[],float*,float,long);
void    sq7rfh(long*,long[],long,long,long,long,float*,float[],long,float[]);
void    ss7cpr(float[],long[],long,long);
void    sv7prm(long,long[],float[]);
void    sv7swp(long,float[],float[]);
void    sqrbd(long*,float[],float[],long,float*,long,long,float*,long,long);
float   srane(float);
float   srang(void);
void    srangv(float*,long,long,float[],float[],LOGICAL32*,long*);
float   srannr(float);
float   srannu(void);
float   srcomp(float,float);
void    srcval(float,float,float*,long*);
void    srdval(float,float,float,float*,long*);
float   srexpr(float);
void    srft(float[],byte,long[],long,long*,float[]);
void    srft1(float[],byte,long,long*,float[]);
void    srfval(float,float,float,float*,long*);
void    srfvlx(float,float,float,float*);
void    srjval(float,float,float,float,float*,long*);
float   srlog(float);
float   srlog1(float);
float   srlog2(float);
void    srn2g(float[],float*,long[],long,long,long,long,long*,long*,long,float[],float[],float[],float[]);
void    sg7lit(float[],float[],long[],long,long,long,long,float[],float[],float[]);
void    sn2lrd(float*,long[],float[],long,long,long,long,long,float[],float[],float[]);
void    sc7vfn(long[],float[],long,long,long,long,long,float[]);
void    sf7hes(float[],float[],long*,long[],long,long,long,float[],float[]);
void    sn2cvp(long[],long,long,long,float[]);
void    sn2rdp(long[],long,long,float[]);
void    so7prd(long,long,long,float[],float[],float*,float*);
void    sl7nvr(long,float[],float[]);
void    sl7tsq(long,float[],float[]);
void    srn2gb(float[][2],float[],float*,long[],long,long,long,long,long*,long*,long,float[],float[],float[],float[]);
void    sg7itb(float[][2],float[],float[],long[],long,long,long,long,float[],float[],float[]);
void    sr7tvm(long,long,float[],float[],float*,float[]);
void    sf7dhh(float[][2],float[],float[],long*,long[],long,long,long,float[],float[]);
float   sh2rfg(float,float,float*,float*,float*);
void    sh2rfa(long,float[],float[],float,float,float);
void    sg7qsb(float[][2],float[],float[],float[],long[],long[],long[],long*,float[],long,long,long*,long,float*,
    float[],float[],float[],float[],float[],float[]);
void    sl7msb(float[][2],float[],float[],long,long[],long[],long[],long*,float[],long,long,long*,long,float[],float[]);

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float*,float[],float[],float[],float[],float[],float[],float[]);
void ss7bqn(float[][2],float[],float[],long[],long[],long[],long*,float[],long,long*,long,long*,float[],float[],
float[],float[],float[],float[],float[]);
void sq7rsh(long,long,LOGICAL32,float[],float[],float[]);
void sv7vmp(long,float[],float[],float[],long);
void sv7ipr(long,long[],float[]);
void sv7shf(long,long,float[]);
void ss7ipr(long,long[],float[]);
void sd7mlp(long,float[],float[],float[],long);
void ss7dmp(long,float[],float[],float[],long);
void srnsg(float*,float[],float[],float*,long[][2],long[],long,long,long,long,long,long,long,float[],float[]);
void srnsgb(float*,float[],float[][2],float[],float*,long[][2],long[],long,long,long,long,long,long,long,long,
float[],float[]);
void srot(long,float[],long,float[],long,float,float);
void srotg(float*,float*,float*,float*);
void srotm(long,float[],long,float[],long,float[]);
void srotmg(float*,float*,float*,float,float[]);
void ssbasd(long,long,float[],float,long,float[]);
void ssbasi(long,long,float[],float,float,long*,long*,float[]);
void sscal(long,float,float[],long);
void ssdif(long,long,float[],float[],long,float*);
void ssfind(float[],long,long,float,long*,long*);
void ssfit(float[],float[],float[],long,long,long,float[],float[],float*,long*,long,float*);
void ssfity(byte[][5],float[],float[],float[],long,long,float[],float[],float*,long[],long[],float[]);
float ssi(float);
float ssin1(float);
float ssinhm(float);
float ssinpx(float);
float ssnpvx(float);
void ssort(float[],long,long);
void ssortp(float[],long,long,long[]);
void ssortq(float[],long,long,long[]);
void sspe(long,long[],long[],float[],float[],float[]);
float ssquad(long,long,float[],float[],float,float);
void sstat1(float[],long,float[],long[],long,float,float);
void sstat2(float[],long[],long,float,float);
void sstop(long,long,float[],float[],float*,long*,float[],float*);
void ssva(float*,long,long,long,long,float[],float[],long[],CHAR_INT,long,float[],float[]);
float ssval(long,long,float[],float[],float,long);
void ssvala(long,long,float[],long,float*,float,float[]);
void ssvdrs(float*,long,long,long,float*,long,long,float[],float[]);
void sswap(long,float[],long,float[],long);
void ssymql(float*,long,long,float[],float[],long*);
void stcst(float[],char*,char*,long[],long,long*,float[]);
void stgc0(float[][3],float*,LOGICAL32,float[]);
void stgc1(LOGICAL32,float[][3],float*,LOGICAL32,float[]);
void stgext(float[],float[],float[],float[][2],long[],long[][4],long,long,float[],long,long,float*,LOGICAL32,float[]);
void stgqs(float[],long[],float[],float[],float[][3]);
void stgfi(float[],float[],float[],float[][2],long[],long,long[][4-(1)+1],long,long,float[],float*,LOGICAL32,
float[],long*,float[]);
void stgfnd(float[],float[],long[],long,float[],long*,long[],float[][3],long*);
void stggrd(float[],float[],long,long[],float[],long[],long,long[][4],long,long*,long[]);
void stgupd(long,long,long[],long[],long,long);
float stgang(float,float,float);
void stgadj(long,long,float[],float[],long,long[],long,long[][4],long,long,LOGICAL32*);
void stgpd(float[],float[],float[],float[][2],long,long[],long,long[]);
void stgmor(float[],float[],float[],long,long[],float[][21]);
void stglis(float[][21],long,long,LOGICAL32*,long,float*,float*);
void stgprg(float[],float[],long,long[],long[][4],long,long);

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void    stgrec(float[],float[],float[],float[][2],long,long[],long,long[][4],long,float[],long,long,float,float*,long,
           long,long,LOGICAL32,float*);
void    stgset(long,long,long,long,long,long,long,long[],long);
void    stgget(long,long[],long[]);
void    stgput(long,long[],long[],long);
void    stgsiz(long,long*);
void    strc2c(float[],long,float[],float[],float[]);
void    susetn(long,long,long);
void    sugetn(long*,long*,long*,long*,long*);
void    suset(float,long,float[]);
void    supro(float[],float[],float[]);
void    suquo(float[],float[],float[]);
void    susum(float[],float[],float[]);
void    sudif(float[],float[],float[]);
void    susum1(float,float[],float[]);
void    sudif1(float,float[],float[]);
void    supro1(float,float[],float[]);
void    suquo1(float,float[],float[]);
void    susqrt(float[],float[]);
void    suexp(float[],float[]);
void    sulog(float[],float[]);
void    supwri(long,float[],float[]);
void    susin(float[],float[]);
void    sucos(float[],float[]);
void    susinh(float[],float[]);
void    sucosh(float[],float[]);
void    suatan(float[],float[]);
void    suatn2(float[],float[],float[]);
void    suasin(float[],float[]);
void    suacos(float[],float[]);
void    suacs(LOGICAL32,float[],float[]);
void    sutan(float[],float[]);
void    sutanh(float[],float[]);
void    surev(float*,float*,long,float*,long[],float*);
void    svecp(float[],long,char*);
void    svecpr(float[],long,char*,long,long,long);
void    swatan(long,float[],float[]);
void    swasin(long,float[],float[]);
void    swacos(long,float[],float[]);
void    swacsi(long,float[],float[],LOGICAL32);
void    swatn2(long,float[],float[],float[]);
void    swsum(long,float[],float[],float[]);
void    swdif(long,float[],float[],float[]);
void    swsqrt(long,float[],float[]);
void    swexp(long,float[],float[]);
void    swsin(long,float[],float[]);
void    swcos(long,float[],float[]);
void    swtan(long,float[],float[]);
void    swsinh(long,float[],float[]);
void    swcosh(long,float[],float[]);
void    swtanh(long,float[],float[]);
void    swset(long,float,float,float[]);
void    swsum1(long,float,float[],float[]);
void    swdif1(long,float,float[],float[]);
void    swpro1(long,float,float[],float[]);
void    swquo1(long,float,float[],float[]);
void    swlog(long,float[],float[]);
void    swpwri(long,long,float[],float[]);
void    swchn(long,float[],float[]);

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```

void    swrchn(long,float[],float[]);
void    swpro(long,float[],float[],float[]);
void    swquo(long,float[],float[],float[]);
void    spasc1(long,float[]);
float    sxparg(long);
void    sxrk8(float[],float[],float[],long[],float[],float[]);
void    sxrk8a(float[],float[],float[],long[],float[],float[]);
void    sxrk8i(float,float[],long[],float[]);
void    sxrk8n(long[],float[],float[],float[],float[],float[],float[]);
float    sxrk8x(float,float,float,float);
void    sxrk8f(float*,float[],float[],long[]);
void    sxrk8g(float[],float[],float[],long[]);
void    sxrk8o(float[],float[],long[],float[]);
void    szero(float*,float*,float*,float*,long*,float);
void    umess(CHAR_INT,long[],long[]);
void    xerbla(char*,long);
void    zcoef(long,double[][2],double[][2]);
void    zdif(double[],double[],double[]);
void    zgam(double[],double[],double*,long);
void    zpolz(double[][2],long,double[][2],double*,long*);
void    zpro(double[],double[],double[]);
void    zquo(double[],double[],double[]);
void    zsqrtr(double[],double[]);
void    zsum(double[],double[],double[]);
void    zwofz(double[],double[],long*);

```