≡ Performance Libraries   USA (English) ⊕ ⧉ ♨

Developer Reference for Intel® oneAPI Math Kernel Library – C

Developer Reference

Version: 2021.1   Last Updated: 12/04/2020   Public Content

Search this document 🔍

Developer Reference for Intel®
oneAPI Math Kernel Library

Getting Help and Support

Extended Eigensolver Output Details

Errors and warnings encountered during a run of the Extended Eigensolver routines are stored in an integer variable, `info`. If the value of the output `info` parameter is not 0, either an error or warning was encountered. The possible return values for the `info` parameter along with the error code descriptions are given in the following table.

Return Codes for info Parameter

info	Classification	Description
202	Error	Problem with size of the system n (n≤0)
201	Error	Problem with size of initial subspace m0 (m0≤0 or m0>n)
200	Error	Problem with emin,emax (emin≥emax)

USA (English) ⊕   👤   🔍

info	Classification	Description
(100+i)	Error	Problem with i-th value of the input Extended Eigensolver parameter (`fpm[i - 1]`). Only the parameters in use are checked.
4	Warning	Successful return of only the computed subspace after call with `fpm[13]` = 1
3	Warning	Size of the subspace `m0` is too small (`m0<m`)
2	Warning	No Convergence (number of iteration loops >`fpm[3]`)
1	Warning	No eigenvalue found in the search interval. See remark below for further details.
0	Successful exit	
-1	Error	Internal error for allocation memory.
-2	Error	Internal error of the inner system solver. Possible reasons: not enough memory for inner linear system solver or inconsistent input.
-3	Error	Internal error of the reduced eigenvalue solver. Possible cause: matrix B may not be positive definite. It can be checked by setting `fpm[27]` = 1 before calling an Extended Eigensolver routine, or by using LAPACK routines.
-4	Error	Matrix B is not positive definite.

≡ info
Performance Libraries

	Classification	Description
-(100+i)	Error	Problem with the i-th argument of the Extended Eigensolver interface.

USA (English) ⊕ ⨂ ⚲

In some extreme cases the return value `info=1` may indicate that the Extended Eigensolver routine has failed to find the eigenvalues in the search interval. This situation could arise if a very large search interval is used to locate a small and isolated cluster of eigenvalues (i.e. the dimension of the search interval is many orders of magnitude larger than the number of contour points. It is then either recommended to increase the number of contour points `fpm[1]` or simply rescale more appropriately the search interval. Rescaling means the initial problem of finding all eigenvalues the search interval $[\lambda_{min}, \lambda_{max}]$ for the standard eigenvalue problem $A\ x=\lambda x$ is replaced with the problem of finding all eigenvalues in the search interval $[\lambda_{min}/\ t, \lambda_{max}/\ t]$ for the standard eigenvalue problem $(A/t)\ x=(\lambda/t)\ x$ where t is a scaling factor.

Related information

Submit feedback on this help topic

Extended Eigensolver Input Parameters   Extended Eigensolver RCI Routines