Computing eigenvalues of periodic Sturm-Liouville problems using shooting technique and direct integration method

ABSTRACT

This paper deals with computing eigenvalues of periodic Sturm-Liouville (SL) problem by direct integration (DI) method using shooting technique without reducing to the system of first order ODEs. Floquet theory is applied to find a non-trivial solution of SL problems and the eigenvalues are approximated by the application of shooting techniques. Computational advantages are presented comparing the results obtained by the DI method with that of reducing to the system of first order ODEs.

Keyword: Direct integration method; Eigenvalues; Shooting technique; Sturm-Liouville problems