Subject: Cubic root finding on a grid
Posted by Luds on Fri, 20 Nov 2009 16:03:40 GMT
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Hi IDL'ers,

I'm trying to find an efficient method for estimating the eigenvalues of a tensor which is defined on a cubic (NxNxN) grid. The tensor is a simple 3x3 (symmetric) matrix defined at each of the N^3 grid points, so the eigenvalues at a given grid point can be calculated by (for example) the IDL routine IMSL_ZEROPOLY simply by finding the roots of the cubic polynomial defined by the matrix at that point - but this routine doesn't handle array's of coefficients, so it has to be evaluated on the grid point by point.

My grids are up to 512^3, so using a for-loop to compute the eigenvalues at each node is rather slow. Does anyone know of any adaptations of the IMSL_ZEROPOLY routine that can work on a grid of 3X3 matricies (or on an array of polynomial coefficients)?

Any suggestions would help.

Best,
Ludlow