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Timothy M McCoy* (tmccoy@nd.edu), 262 Hurley Hall, Notre Dame, IN 46556. *Extensions of Filtering Techniques and Applications to Zebrafish*. Preliminary report.

Discretizations of PDEs arising from models of interest in science and engineering often yield polynomial systems. Homotopy continuation methods offer a means of computing all solutions to such systems without any a priori expectations. However, the relative number of solutions of physical significance is typically small, so many CPU cycles are wasted on discarded solutions. For problems on large grids, this can lead to impractical computation time. Filtering is a technique for reducing this inefficiency by first solving on a smaller, tractable grid. This talk will look at recent refinements to filtering, with specific applications to a model of dorsal-ventral patterning in zebrafish. (Received September 14, 2010)