Meeting: 1003, Atlanta, Georgia, MAA CP B1, MAA Session on My Favorite Demo: Innovative Strategies for Mathematics Instructors, I

1003-B1-424 **Matthias Kawski** (`kawski@asu.edu`), Department of Mathematics, Arizona State University, Phoenix, AZ 85287, and **Tevian Dray*** (`tevian@math.oregonstate.edu`), Deparemtent of Mathematics, Oregon State University, Corvallis, OR 97331. *Visualizing Vector Derivatives: The Vector Field Analyzer.* Preliminary report.

What does it mean to take the derivative of a vector field? While easy to define algebraically, the geometry is not usually discussed. The Vector Field Analyzer (http://math.la.asu.edu/~kawski/vfa2), a JAVA applet developed by Shannon Holland and Matthias Kawski at Arizona State University, solves this problem and more, at least in two dimensions.

This talk describes the use of the Vector Field Analyzer as a demo in vector calculus classes at Oregon State University. It provides several geometric representations of vector derivatives in general, and the divergence and curl in particular. Among its features are the ability to watch the flow of a vector field, and to see graphic representations of the work and flux for arbitrary closed paths in a given vector field. It's also just plain fun! (Received September 14, 2004)