1116-34-2284 **Dylan P O'Connell*** (doconnel@haverford.edu), 161 Waban Hill Rd N, Newton, MA 02467, and **Joe Chen**, **Fan Ny Shum**, **Rajeshwari Majumdar**, **Lance Ford**, **Derek Kielty** and **Heather McCain**. *Stochastic Stabilization of Complex Multivariable Systems.*

A polynomial complex-valued Ordinary Differential Equation (ODE) contains trajectories blowing up in finite time (which we will refer to as *explosions*). Past research has shown that by adding a suitable complex-valued Brownian motion to the equation, the trajectories from any initial condition in $\mathbb{C}$ will converge toward the stable fixed point with probability 1.

Much less is understood about the analogous stochastic stabilization problem in higher dimensions. To that end, we investigate a prototype multivariable system of ODEs in $\mathbb{C}^2$, which admits explosive solutions. The goal is to stabilize the system by introducing a suitable Brownian noise. We found that by performing a coordinate transformation, the system can be reduced to a quasi-1-dimensional ODE similar to the polynomial form. This modification enables us to identify necessary and sufficient conditions for the Brownian noise to stabilize. These conditions have been verified numerically, and rigorous proofs are forthcoming. (Received September 22, 2015)