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**Fan Ny Shum\*** ([fan.shum@uconn.edu](mailto:fan.shum@uconn.edu)). *Stabilization by Noise of a  $\mathbb{C}^2$ -valued Coupled System.*

David Herzog and Jonathan Mattingly took a system of ODEs in the form of a complex-valued polynomial and added an isotropic Brownian term to stabilize the system. In particular, they showed that this perturbed system has ergodic properties; that is, it has nonexplosive solutions and a unique invariant measure. The next natural step is to look at ODEs in higher dimensions, for instance, the complex-valued ODE

$$\begin{cases} \dot{z}_t = -\nu z_t + \alpha z_t w_t \\ \dot{w}_t = -\nu w_t + \beta z_t w_t \\ z_0, w_0 \in \mathbb{C}, \end{cases} \quad \text{where } \nu \in \mathbb{R}^+, \alpha, \beta \in \mathbb{R}.$$

Similar to the polynomial system, this higher-dimensional ODE has solutions that blow up in finite time. Using a transformation of coordinates, we show how this system with an additive Brownian term is ergodic. (Received September 07, 2015)