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**Adam Layne\*** (anlayne@uoregon.edu), Mathematics, 1222 University Of Oregon, Eugene,, OR 97403-1222, and **Beverly Berger** and **James Isenberg**. *Analytic results and numerical evidence for global behavior of the Einstein Field Equations in the  $T^2$ -symmetric setting*. Preliminary report.

Recent progress in understanding spatially closed, vacuum spacetimes with Killing fields has been characterized by instabilities. This is in contrast to the open case where, for example, Minkowski is known to be stable. With Profs. Berger and Isenberg, we prove several results related to the stability of such solutions, expanding on previous work of LeFloch and Smulevici. We also present recent numerical work exploring the space of  $T^2$ -symmetric spacetimes and the occurrence of these instabilities, as well as potential attractors far from most previously identified classes. (Received February 05, 2018)