

Abstract Submitted
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Evolution of 3D Boson Stars with Waveform Extraction RUXAN-
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Harris-Stowe State College, MO, GREGORY DAUES, NCSA, FRANCISCO GUZ-
MAN, EDWARD SEIDEL, Louisiana State University, LA; Albert Einstein Insti-
tute, Golm, Germany — This talk will present results from a study of boson stars
under nonspherical perturbations using a fully general-relativistic 3D code based
on the Cactus Computational Toolkit. We study the evolution of stable, critical
and unstable boson stars subjected to various types of nonspherical perturbations
and analyze the emitted gravitational waves. We calculate the Zerilli and Newman-
Penrose Ψ_4 gravitational waveforms and study the quasinormal mode content of the
numerical waveforms using predicted QNM frequencies from perturbation theory
calculations of Yoshida, Eriguchi and Futamase. Our results show that the wave-
forms accurately display the strong damping predicted for quasinormal modes of
boson stars. The apparent horizons formed from perturbed unstable star collapse
were observed to be slightly nonspherical when initially detected and became more
spherical as the system evolved.

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