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Binary Neutron Stars with Arbitrary Spins in Numerical Relativity HARALD PFEIFFER, NICK TACIK, Canadian Institute for Theoretical Astrophysics, University of Toronto, FRANCOIS FOUCART, Lawrence Berkeley National Laboratory, ROLAND HAAS, Albert-Einstein-Institute, Golm, Germany, JEFFREY KAPLAN, Theoretical Astrophysics, California Institute of Technology, CURRAN MUHLBERGER, Center for Radiophysics and Space Research, Cornell University , MATT DUEZ, Dept. of Physics and Astronomy, Washington State University, LAWRENCE KIDDER, Center for Radiophysics and Space Research, Cornell University , MARK SCHEEL, BELA SZILAGYI, Theoretical Astrophysics, California Institute of Technology — We present a code to construct initial data for binary neutron star where the stars are rotating. Our code, based on the formalism developed by Tichy, allows for arbitrary rotation axes of the neutron stars and is able to achieve rotation rates near rotational breakup. We demonstrate that orbital eccentricity of the binary neutron stars can be controlled to $\sim 0.1\%$. Preliminary evolutions show that spin- and orbit-precession of Neutron stars is well described by post-Newtonian approximation. The neutron stars show quasi-normal mode oscillations at an amplitude which increases with the rotation rate of the stars.

Harald Pfeiffer
Canadian Institute for Theoretical Astrophysics (CITA

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