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The Strong Field Dynamics of Binary Neutron Star

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What is the nature of neutron stars? Where are r-process elements formed in the Universe? Multimessenger observations of neutron star mergers might provide us with the key to answer these and other important open questions in theoretical astrophysics. However, multimessenger astronomy also poses new challenges to the theorists who need to develop models for the joint interpretation of all data channels. In this talk, I will review our current theoretical understanding of how neutron star mergers proceed and of how the dynamics is imprinted in their multimessenger emissions. I will present recent simulation results and their implications. Finally, I will discuss future challenges and prospective for this field.