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Neutron Star Mergers: Multimessenger Probes of Extreme Matter

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Binary neutron star mergers are critical for understanding the dynamics of dense matter, the origin of gravitational waves, and the formation channels of the heaviest elements through the r-process. I will review how long-lived remnants can act as central engines for multimessenger observations. I will then discuss how we can identify phase transitions within neutron stars or their remnants using such observations. Phase transitions alter the system's dynamics and can produce distinct observable signatures, potentially detectable with next-generation facilities and observatories. These signatures can be used to probe matter at supranuclear densities and to test fundamental physics.

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Classification de Session: Holography & Dense Matter