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The Double Pulsar

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The double pulsar PSR J0737-3039A/B is a unique laboratory for precision tests of strong-field gravity, with the pulsars' mass ratio available in addition to five "post-Keplerian" relativistic effects. We have recently shown that the most precisely measured parameters are consistent with the predictions of general relativity to within 0.05%, the most stringent test to date in the strong-field regime. Furthermore, consideration of the binary system's low space velocity leads to the conclusion that the progenitor of the second-born pulsar was most likely a Helium star of less than 2 solar masses which suffered only a small asymmetric kick during its supernova explosion.