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From stars and seismic waves to the fundamentals of gravity

Tuesday 1 July 2025 18:15 (1 hour)

We will explore the nature of gravity and the modern physics tools that enhance our understanding of this fundamental force. By studying remarkable objects such as neutron stars and white dwarfs, we gain access to natural laboratories where gravitational theories can be tested under extreme conditions, revealing the interplay of fundamental interactions. In addition, we will examine other astrophysical objects, including those closer to us, such as the Sun, Earth, and the planets of our Solar System. These familiar celestial bodies have become promising candidates for investigating the intricacies of gravity and its potential quantum corrections. Through their study, we uncover the phenomena that challenge the classical descriptions and open pathways to a deeper understanding of gravitational physics and other fundamental interactions. Notably, seismic waves seem to carry vast amounts of untapped information that has yet to be thoroughly explored. This comprehensive exploration, spanning distant stellar remnants to the planets in our cosmic neighborhood, provides a rich perspective on gravity and its role in shaping the universe.

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