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Searches for a stochastic background of gravitational waves[1]

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A Holy Grail of gravitational-wave astronomy is the detection of a cosmological stochastic gravitational-wave background (SGWB) formed in the very early universe. Detection of the SGWB may allow us to probe time scales and energies not accessible with conventional astronomy or accelerators, though there are considerable experimental challenges to overcome. Additionally, the SGWB may be obscured by a stochastic gravitational-wave foreground, interesting in its own right, and produced from the superposition of astrophysical phenomena such as neutron stars. I review mechanisms for the creation of stochastic backgrounds and foregrounds. I discuss data-analysis strategies and the prospects for detection.

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