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A new mechanism of gravitational wave production

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First-order phase transitions in the early Universe are a well-motivated source of gravitational waves (GWs). In this talk, I will discuss a previously overlooked GW production mechanism: gravitational transition radiation, arising from graviton emission by particles whose mass changes as they pass through expanding bubble walls. The resulting spectrum features a distinctive shape with a peak frequency redshifting to $f_{\text{peak}} \sim T_0 \sim 10$ GHz, where T_0 is the current temperature of the Universe. This mechanism is generic and is expected to operate similarly for domain walls and other relativistic interfaces.

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