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Primordial clocks in stochastic gravitational wave anisotropies

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Sudden onset of classical oscillations of a heavy field during inflation leaves a characteristic scale-invariance-breaking oscillatory feature in the power spectrum of primordial fluctuations. The presence of such features provides a unique opportunity to detect the dynamics of heavy fields during inflation. While such features are constrained to be small in adiabatic perturbations, we show that it may not be the case for isocurvature perturbations in multi-field inflationary scenarios. I will demonstrate a possibility of observing large primordial features in the anisotropies of stochastic gravitational wave (GW) background originating from a first-order phase transition in a hidden sector. I will show that the signal can be observably large in the GW map while being completely hidden in the standard adiabatic perturbations such as those of the Cosmic Microwave Background.

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