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Parity violation as a probe for dark matter and theories beyond General Relativity

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Next generation gravitational wave (GW) observatories will have sensitivities capable of obtaining polarization data of the GWs, which is one way to constrain parity violating models beyond General Relativity. Interestingly, this can also serve as a novel way to probe dark matter physics, in particular models which include nonminimal couplings between the metric and dark matter. In this talk, we will outline a model independent parameterization of the gravitational waveforms which captures effects of this type. Then, we will present a specific example of a dimension-four operator coupling the dual Riemann tensor to the Kalb-Ramond two-form, which has recently gained attention as a dark matter candidate.

Presenter: MANTON, Tucker (Brown University)