

Physics Colloquium, St. Francis Xavier University

December 4, 2018, 4pm, PSC 3046

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Particle Physics at the Precision Frontier

We know that the Standard Model of Particle Physics is incomplete - for example, we still do not understand the nature of dark matter, matter- antimatter asymmetry or hierarchy of the three generations of elementary particles. There is a wide spectrum of experiments searching for new particles beyond the Standard Model (BSM), broadly defined by three domains - Energy, Cosmic and Precision frontiers. The Energy frontier concentrates on the high-energy production of BSM particles, the experiments at the Cosmic frontier are dedicated to astrophysical searches of the products of the decays of BSM particles, and the Precision frontier is focused on low-energy but high-precision searches mostly in parity-violating high-intensity scattering. At the Precision frontier, we look for the BSM particles acting as the interaction carriers, having a small, but potentially detectable impact on the scattering observables. The talk will outline the latest advances in the precision parity-violating BSM physics searches in both theory and experiment.