## Phenomenology 2019 Symposium



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## Searching for Dark Photons with Maverick Top Partners

Monday 6 May 2019 18:00 (15 minutes)

We present a model using up-type vector like quark (VLQ) charged under an additional  $U(1)_d$  gauge force, whose gauge boson is the dark photon  $\gamma_d$ . If the dark photon is much less massive than the standard model electroweak sector ( $M_{\gamma_d} \ll M_Z$ ), the VLQs, which are pair produced via the strong force, predominately decay to dark photons and a dark Higgs that breaks the  $U(1)_d$ . Hence, the dark photons production rate is predominately determined by the gauge structure and not the small kinetic mixing with hypercharge. In this talk we focus on the allowed leptonic decays of the dark photon presenting branching ratios and decay length calculations. We demonstrate there is a rich phenomenology of dark photon decays with prompt decays, displaced vertices, decays within the detector, and decays outside the detector depending on the parameter choices in the model.

Summary

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