## Phenomenology 2022 Symposium: From Virtual to Real



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## Studying Dark Z at Future e+ e- Colliders

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Additional gauge interactions are ubiquitous in well motivated extensions of the Standard Model (SM); a particularly simple example is that of an extra U(1) gauge group. In this work, we study the case in which there are simultaneously both kinetic mixing and mass mixing (arising from the Higgs sector) of this extra U(1) into the SM. We show that the additional gauge boson, called the 'dark Z', can potentially be discovered at future  $e^+e^-$  colliders (e.g. the ILC). In addition, we demonstrate how the ILC can perform precision studies on the dark Z's couplings with SM fermions.

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