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Abstract for an Invited Paper
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Theory and Status of New Sub-GeV Forces

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The search for new forces mediated by sub-GeV particles with very weak coupling to matter (“dark forces”) is an emerging frontier in physics beyond the standard model. These forces remain quite weakly constrained, but will be explored by several experiments in the coming years. We will outline the theoretical motivations for such forces, and their possible connection to the physics of dark matter and the anomalous magnetic moment of the muon. We will also discuss their phenomenology and the prospects for upcoming searches at high-energy colliders, flavor factories, and dedicated fixed-target experiments. Though the talk will focus on searches for MeV-to-GeV-mass force carriers, we will also briefly discuss a related class of searches for even lower-mass particles mixing with the photon, known as “paraphotons.”