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Precision Electroweak Tensions and a Wide Dark Photon

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The dark photon is a well-motivated and well-studied extension to the Standard Model. The strongest bounds on a dark photon with a mass near the Z pole come from precision electroweak analysis while for higher masses, collider bounds dominate. Existing tensions involving the heavy flavor observables, the W boson mass, and the muon magnetic moment motivate a revisiting of the precision electroweak bounds, and the collider bounds can be relaxed if the dark photon has a nontrivial branching ratio to a dark sector. In this talk, I discuss the effects of different data combinations on the precision electroweak fit and the viable dark photon parameter space. I also discuss the complementarity between collider searches and precision electroweak bounds for a wide dark photon.

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