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Attacking Heavy Dark Matter on Two Fronts

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The indirect detection program looks for annihilation and decay products of dark matter from astrophysical sources. In its high-mass regime, it offers the only way to get ‘right here, right now’ constraints on many motivated scenarios. I will describe two possible stories for dark matter at or beyond the weak scale, and current & projected limits on them. The first is the case of vanilla electroweak weakly-interacting massive particles (WIMPs) that realize the WIMP miracle. I will specifically focus on the cases of SU(2) triplet (wino) and quintuplet. Secondly, we can consider Ultra-Heavy Dark Matter (UHDM) out to scales well above 1 PeV. Despite a naive unitarity limit of 100-200 TeV for a thermal relic, bound state and/or compositeness effects can easily boost annihilation cross sections in a consistent manner.

Primary author: BAUMGART, Matthew (Arizona State University)

Presenter: BAUMGART, Matthew (Arizona State University)

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