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(sub-)GeV dark matter - asymmetric dark matter

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Asymmetric dark matter (ADM) explains the present DM abundance by asymmetry between DM particles and anti-particles, like visible matter or standard model (SM) baryons.

ADM is particularly interesting when the visible and dark asymmetries have a common origin, since their abundances are different only by a factor of ~ 5 .

When the asymmetries are equilibrated in the early Universe and thus comparable, DM mass should be in the GeV range.

In this talk, we illustrate how an ADM scenario works, by taking dark baryon DM as a concrete example, since it has several attractive features.

To alleviate cosmological problems, we also introduce a massive dark photon that couples to SM particles.

The very dark photon leads to various experimental and astrophysical signatures.

We give an overview of the signatures in DM direct and indirect detection experiments, and fixed-target and long-lived particle searches.

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