

# Continuous flavor symmetries and the stability of asymmetric dark matter

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Generically, the asymmetric interactions in asymmetric dark matter (ADM) models lead to decaying dark matter. We show that, for ADM that carries nonzero baryon number, the continuous flavor symmetries that generate the flavor structure in the quark sector also imply a looser lower bound on the mass scale of the asymmetric mediators between the dark and visible sectors. We show that the mediators for  $B = 2$  ADM can be of  $O(\text{TeV})$  and can thus be searched for at the LHC. We construct mediator models with either the Minimal Flavor Violation or Froggatt-Nielsen flavor breaking patterns and, for each model, we derive the FCNC constraints and discuss the search strategies at the LHC.