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Sexaquark Dark Matter: Overview; constraints on breakup from SNOlab; relic DM density ZIHUI WANG, GLENNYS FARRAR, New York Univ NYU — The conjectured color-spin-flavor singlet bound state of (uuddss) quarks can be a stable and compact particle, the sexaquark (S). Such a particle, formed from QCD plasma in the early universe, explains the observed dark matter abundance if the breakup amplitude of S to two baryons is smaller than a few 10^{-6}. We show that this small breakup amplitude is compatible with theoretical expectation because the S can be much smaller than baryons and furthermore two baryons have a very strong short-range repulsion. The transition betwen S and two baryon is thus naturally highly suppressed. We moreover obtain observational constraints on the mass of the S and the breakup amplitude based on the stability of deuterons, hypernuclei and S. Related constraints such as SN1987a cooling and neutron star masses are discussed and shown to not be problematic for the SDM scenario. Direct detection, cosmology and astrophysics constraints and other consequences are discussed in session A03.

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