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## Formation of massive black holes with M = (10^3-10^8) M\_O through accretion of self-interacting dark matter onto a stellar mass seed black hole

The distant luminous quasars host supermassive black holes of mass 109 MO thus questioning the presence and formation of the later in the early universe. The formation of massive black holes is studied by the process of Hoyle-Lyttleton-Bondi accretion of self-interacting dark matter (SIDM) onto a 20 M seed black hole moving with velocity 100 km/s in the SIDM halo. We consider observationally constrained range of the specific SIDM cross section ( $\sigma$ /mdm) taken as (0.1 –5)  $cm^2g^{-1}$ . The formation time of these massive black holes of mass M = ( $10^3 - 10^8$ ) M is calculated for the universal NFW profile of accreted dark matter, Singular Isothermal Sphere (SIS), power law profiles with cusp index 2.19 $\leq$ y $\leq$ 2.5 of accreted dark matter and core-modified isothermal profiles. The ambient sound speed is taken as Cs= (10-100) km/s. Within all the considered profiles ( $10^3 - 10^8$ )M black holes are found to grow within few tens to hundred Myrs at redshifts z= (5-30), well before the quasar epoch.

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