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Sommerfeld Enhancement in Radiative neutrino Mass Models with Large Scalar Multiplets SALAH NASRI, United Arab Emirates University, TALAL CHOWDHURY, Dhaka University — We investigate the Sommerfeld enhanced Dark Matter (DM) annihilation cross sections into WW, ZZ, $\gamma\gamma$ and γZ at present day in the galactic halo for DM candidates in models of Radiative Neutrino Mass generation with large electroweak multiplets. Firstly, we focus on scalar DM of one-loop radiative neutrino mass model (Scotogenic Model) and study the annihilation cross-sections for scalar doublet and its immediate generalization, the quartet in their respective viable region of parameter space. Secondly, we consider fermionic DM of three-loop radiative neutrino mass model (Krauss-Nasri-Trodden Model) and study the annihilation cross-sections for 5-plet and 7-plets respectively. In both cases, we find that larger multiplets have sizable Sommerfeld enhanced cross-sections compared to the smaller multiplets and are more constrained by the current H.E.S.S. observation and future CTA sensitivity limits.

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