

Self-heating dark matter: semi-annihilation + self-interaction

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Thermal freeze-out of dark matter is a prominent mechanism to explain the relic abundance. There are several processes suggested to govern thermal freeze-out: pair-annihilation, semi-annihilation, and 3-to-2 process. Among them, semi-annihilation is distinctive. It causes an efficient conversion from the mass energy into the kinetic energy in collaboration with self-interaction. This phenomenon is dubbed as self-heating.

I will discuss both the early and late stages of structure formation of the Universe in self-heating dark matter. Particular stress is put on that the impact of self-heating drastically increases toward smaller-size halos.

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