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Rotation of Population III Stars

Thursday, 8 July 2021 17:30 (20 minutes)

The first stars in the Universe, the so-called Population III (Pop III), formed at the end of the cosmic dark ages, a few million years after the Big Bang. Their impact on early cosmic history, in terms of ionizing radiation and the initial enrichment of the intergalactic medium with heavy chemical elements, crucially depends on the Pop III initial mass function (IMF). Numerical simulations indicate that the primordial IMF is top-heavy, with typical masses of a few tens of solar masses. To predict the final fate of the first stars, and the nucleosynthetic pattern of elements produced throughout their lives, a second key ingredient is the rotation state of this elusive stellar population. I will review our current understanding of Pop III stellar rotation, and will discuss select diagnostics and cosmological consequences of such rapidly rotating stars at the dawn of star and galaxy formation.

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