Big Bang nucleosynthesis simulations for ^{2}H abundance predictions

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Big Bang nucleosynthesis (BBN) addresses the light isotope production in the first few minutes of the universe by numerically solving the differential equations introduced by the reaction network, in the setting of general relativity. Thereby it is an excellent method of probing our understanding of the physics of the early universe. With recent observations made by R. Cooke et al. (2016) and the Planck mission (2018) concerning the primordial deuterium abundance and baryon to photon density today, respectively, BBN has entered the high precision era. However, some tension between prediction and measurement is present.

In this poster it is studied whether or not concordance can be achieved by varying certain input parameters (e.g. N_{eff}, G_{N}, ω_{b}) and thermonuclear reaction rates using the PRIMAT code by C. Pitrou et al. (2018).