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# Boltzmann equation for relativistic species and Hot Dark Matter

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The latest Planck CMB data seem to strongly constrain the Hot Dark Matter scenarios, although they stay in tension with direct Hubble constant measurements. One can expect that in near future the experimental uncertainly for the effective number of neutrino species N_{eff} will shrink vastly. Therefore, in order to estimate the allowed parameter space of models predicting a Hot Dark Matter component, it is crucial to calculate its relic density with high accuracy. In my talk I will exploit the Boltzmann equation in the form suitable for relativistic species in Weinberg's Higgs portal model. I will also discuss how in similar scenarios different statistics of incoming/outgoing particles my influence the results. Work in collaboration with prof. Marek Olechowski.

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