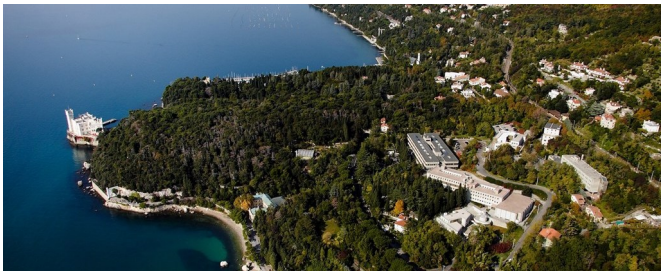

Contribution ID: **43** Type: **not specified**

Quintessential Cosmological Tensions

Tuesday 29 August 2023 21:35 (5 minutes)

Several cosmological tensions have emerged in light of recent data, most notably in the inferences of the parameters H_0 and σ_8. We explore the possibility of alleviating both these tensions {\it simultaneously} by means of the Albrecht-Skordis "quintessence" potential. The field can reduce the size of the sound horizon r_s^* while concurrently suppressing the power in matter density fluctuations before it comes to dominate the energy density budget today. Interestingly, this rich set of dynamics is governed entirely by one free parameter that is of $\mathcal{O}(10)$ in Planck units. We find that the inferred value of H_0 can be increased, while that of σ_8 can be decreased, both by $\approx 1\sigma$ compared to the \lcdm\ case. However, ultimately the model is disfavored by Planck and BAO data alone, compared to the standard ΛCDM model, with a $\Delta\chi^2 \approx +6$. When including large scale structure and supernova data we find $\Delta\chi^2 \approx +1$. We note that historically much attention has been focused on preserving the three angular scales θ_D, θ_{EQ}, and θ_s^* to their ΛCDM values. Our work presents an example of how, while doing so indeed maintains a relatively good fit to the CMB data for an increased number of ultra-relativistic species, it is a-priori insufficient in maintaining such a fit in more general model spaces.

Presenter: ADIL, Arsalan

Session Classification: Posters of tuesday (ignore time)