

# As good as it gets – solving the H<sub>0</sub>-tension Ñ la Ellis & Stoeger

*Sunday 11 September 2022 16:50 (10 minutes)*

Cosmological models were essential to interpret the sparse observations we could collect in the first decades of modern cosmology. Our current  $\Lambda$ CDM standard model was established when an increasing amount of multiple data sets corroborated the prior assumptions of homogeneity and isotropy on largest scales. Now, several oddities and tensions emerge when evaluating more data of even better quality within this framework. Some call the tensions a crisis, I call them an opportunity to gain a deeper understanding. In this talk, I will present the opportunity to solve the H<sub>0</sub>-tension as a mere fitting problem that matches a continuous cosmological model to a set of granular observations living on perturbation level, based on Ellis & Stoeger 1987. The H<sub>0</sub>-fitting problem then amounts to two fits of  $\Lambda$ CDM, one at early, one at late cosmic times. Highly non-linear, evolved structures in a limited volume complicate the fit at late times and can easily cause deviating parameters compared to the fit at early times when structures are small perturbations on top of the background and our observations cover a much larger volume. This approach not only explains the H<sub>0</sub>-tension but also sets a clear roadmap how to obtain a background cosmology in which all observations can consistently live without tension. Based on the current status-quo in observations, I will outline how to employ existing and upcoming data to arrive at this goal within the next years. Further details can be found in <https://arxiv.org/abs/2203.11219> (invited paper submitted to the Focus Issue on the Hubble Constant Tension in CQG)

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