## **Particle Physics Challenges**



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## **Global Fits of Axion Models**

Wednesday 26 September 2018 15:00 (15 minutes)

One of the two possible scenarios for the Peccei-Quinn symmetry is to break before the end of inflation without being restored afterwards. In this case, the axion field is homogeneous across the observable universe and its initial field value is random. A Bayesian analysis of this scenario can quantify the well-known existence of "natural"values for the initial misalignment angle and axion mass. This is particularly interesting when embedded into a consistent, global statistical analysis, including most of the known experimental constraints. We achieve this using the global fitting software GAMBIT. Finally, the predictivity of such a global fit can be improved if cooling anomalies are included.

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