

# Axion kinetic misalignment and baryogenesis

*Monday 22 June 2020 16:00 (1 hour)*

<b>Zoom meeting:</b> <https://cern.zoom.us/j/7930190483> (password: see email)

<b>Format:</b> 40 minutes talk + 20 min discussion

<b>Virtual Axion Institute:</b> The discussion on this talk can be continued in Keisuke's virtual guest office. <https://mattermost.web.cern.ch/axions/channels/keisuke-harigaya>

<b>Abstract:</b> We will introduce a new cosmological evolution of the QCD axion and an axion-like particle, where the axion field circulates in the potential. Axion dark matter is produced by kinetic misalignment, which allows for a decay constant much below the prediction of the conventional evolutions. The new axion dynamics creates the baryon asymmetry of the universe. In the minimal scenario, which we call axiogenesis, the coupling strength of the axion to standard model particles is predicted as a function of the axion mass. The predicted range is within reach of future experimental axion searches. The lepton number violation by Majorana neutrino masses may aid the baryogenesis scheme. In this scenario, which we call lepto-axiogenesis, we instead obtain a prediction on the mass of the Peccei-Quinn symmetry breaking field, which, in supersymmetric theories, is tied with the masses of super partners.

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**Session Classification:** Dark matter