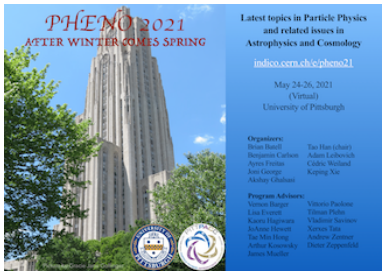


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# Heavy QCD Axion in b⟶s transition

*Monday 24 May 2021 17:30 (15 minutes)*

I will talk about a "heavy" QCD axion whose coupling to the standard model is dominated by $aG\widetilde{G}$ but with $m_a \gg m_\pi f_\pi / f_a$. This is well motivated as it can solve the strong CP problem while evading the axion quality problem. Such axion with mass around a GeV is kinematically inaccessible or poorly constrained by most experimental probes except B-factories. We study $B \to Ka$ transitions as a powerful probe of the heavy QCD axion by performing necessary 2-loop calculations for the first time, together with some improvement on the existing analysis strategy. We find some of the existing limits are enhanced by at least an order of magnitude. For forthcoming data sets of the Belle II experiment, we provide a projection that $f_a$ of a few TeV is within its future reach, which is relevant to the quality problem.

## Summary

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