

Studying $H \rightarrow \tau\tau$ and $A \rightarrow \tau\tau$ decays at ATLAS

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Higgs CP

- Continuing work from Run 2 analysis previously done in our group
(<https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/HIGG-2019-10/>)
- Now ongoing: reconstructing CP-observables in $H \rightarrow \tau\tau$ decays with Machine Learning techniques with Run 2 data
- Run 3 analysis of course also of interest

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Searching for $A \rightarrow \tau\tau$

- Searches for additional (pseudo) scalar particles in the mass range around Z and H bosons in the $\tau\tau$ final state uncovered by ATLAS (so far)
- Currently finalizing a re-interpretation of the $H \rightarrow \tau\tau$ cross section measurement using LHC Run 2 data
- Future plans: repeat analysis using Run 3 dataset and include additional separation from the Z background using spin-sensitive observables

