

# The 2022 International Workshop on the High Energy Circular Electron Positron Collider

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Type: **Talk**

## Parton showers for high precision $e^+e^-$ collisions

*Wednesday, 26 October 2022 16:00 (30 minutes)*

Parton showers are ubiquitous theoretical tools in collider physics providing a crucial link between theory and experiment. In this talk I will give a general introduction to final-state parton showers and review recent developments in understanding and improving their accuracy - all within the context of the PanScales collaboration. One limitation of most parton showers is that they are inherently classical rather than quantum mechanical. Since the fundamental particles of Quantum Chromo Dynamics carry both spin and colour, any faithful description of collider events must include quantum interference effects due to both. I will therefore discuss in more detail how to incorporate quantum interference effects in parton showers, focusing mainly on spin correlations, and how to potentially measure them at colliders like the CEPC.

**Presenter:** KARLBERG, Alexander

**Session Classification:** QCD