

## Bridging physical and digital worlds with a mechanical digital twin

*Tuesday 25 June 2024 10:00 (25 minutes)*

The Future Circular Collider (FCC) demands extremely stringent vibrational stability and precise alignment of its arc cell components. This workshop contribution focuses on the development of a digital twin for the FCC arc cell mockup to address these critical mechanical challenges. The digital twin integrates comprehensive vibrational analysis data to create an accurate virtual model of the physical structure. The ultimate goal of the Digital Twin is to simulate the behavior of the arc cell under various operational conditions to help predicting and mitigating issues related to vibrational instability and misalignment. This approach not only enhances the predictive capabilities of the model but also provides valuable insights for optimizing the design and operation of the FCC, ensuring it meets the demanding requirements for mechanical performance and stability.

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