Contribution ID: **451** Type: **not specified**

The Great Questions in Fundamental Physics and the Detector Technology Challenges to Address them via the ECFA Detector Roadmap

Monday, 23 May 2022 08:40 (30 minutes)

Transformative discovery in science is driven by innovation in technology. Our boldest undertakings in fundamental physics have at their foundation precision instrumentation. To reveal the profound connections underlying everything we see from the smallest scales to the largest distances in the Universe, to understand its fundamental constituents, and to reveal what is still unknown, we must invent, develop, and deploy advanced instrumentation. The 2020 European Strategy for Particle Physics requested that ECFA organize a roadmap developed by the community to balance the detector R&D efforts in Europe, taking into account progress with emerging technologies in adjacent fields. The roadmap identified and described a diversified detector R&D portfolio that has the largest potential to enhance the performance of the particle physics programme in the near and long term. This talk will outline some of the great questions in particle physics and how the ECFA Detector Roadmap addresses them.

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