

The logo features a red square on the left containing a white '4' and a white stopwatch icon. To the right of the square, the word 'Tracking' is written in a large, bold, red sans-serif font. A horizontal line with several small circles and a brushstroke-like end extends from the '4' across the top of 'Tracking'. Below 'Tracking', the words 'workshop 2024' are written in a large, bold, grey sans-serif font.

4D Tracking workshop 2024

Contribution ID: 1

Type: **not specified**

Introduction

Thursday, 7 November 2024 08:00 (15 minutes)

Workshop charge:

The central question driving this workshop is: What are the best technologies for developing a 4D tracker over the next 10 years, and how can we effectively integrate them? While this question cannot be definitively answered today, it is clear that significant generic R&D is required. This R&D should progress from proof-of-principle demonstrations of individual components to the development of a 4D tracking system demonstrator—something capable of performing 4D tracking in a test beam environment.

The goal of this workshop is to formulate concrete proposals for a U.S. program that enables steady progress towards such a demonstrator. A key initial step will be defining the necessary requirements and specifications. This doesn't mean that individual technologies (such as sensors) need to be selected and fixed at this stage. However, a hybrid approach could be outlined, where different sensors can be integrated with a common readout chip, allowing flexibility as the technologies evolve.

As future applications like HL-LHC Phase 3, MUC, FCC-ee/ILC, and FCC-hh continue to take shape, we aim to identify specific challenges these applications will demand. By focusing on challenges that are achievable with current technology, we can explore options that will guide the development of future detector systems before moving into application-specific R&D.

The workshop will conclude with a short report summarizing the key findings and recommendations related to these charge questions.