

ARI

**ISSUE 26** 

08 Oct 2018

## Discussing a future strategy for muon colliders

by L Marco Zanetti (INFN), Frank Zimmermann (CERN)

## muon colliders Photon Beams

Discussing status and ongoing efforts in light of the upcoming European Strategy update.



Fig.1: Some participants of the ARIES WP6 Workshop on Muon Colliders. (Credit: CERN) On 2-3 July 2018 a muon collider workshop at the University of Padua attracted 78 experts from Europe and the US, as illustrated in Figs.1 and 2. This workshop was the second event organized in the frame of ARIES Work Package 6.6, following the Photon Beams Workshop in November 2017.

Setting the stage, Carlo Rubbia, from CERN and INFN, the recipient of the 1984 Nobel

Prize for Physics, called for an initial cooling experiment to demonstrate muon cooling and the merits of parametric ionization cooling. He pointed out that the facility would comprise a ring at the scale of the PS, and hinted at the ESS being the ideal place for a muonbeam facility in Europe. Recognizing the muon colliders as a project of reasonable cost and reasonably fast, he admonished the audience to pursue scientific work instead of "PowerPoint studies".

BNL's Mark Palmer summarized the results of the US MAP studies. In particular he described the design of the facilities NuSTORM, and NuMAX, which are short and long baseline options, respectively, with enormous capabilities for precision physics. A multi-TeV muon collider would fit on the FNAL site, and he also discussed alternative options for a muon collider in the LHC tunnel. The MAP study had considered 10 T dipoles, or about 1000 turns decay time. Similar to the first speaker, Mark's recommended strategy was to build NuSTORM and pursue a cooling demonstration. The full physics performance and achievable resolution need to be analyzed. The preferred scenarios is a programme which culminates in a muon collider and which does exciting science all along the way.

