



Contribution ID: 120

Type: **Oral**

Bent Crystal Extraction from a 100 TeV Proton Collider

Wednesday, 8 October 2014 12:15 (15 minutes)

Proposal on the crystal assisted extraction of halo particles from a new 100 TeV proton collider which is under study in CERN is presented. It is suggested to produce a horizontal dogleg with the Lambertson magnet in a straight section of the collider as it was planned for a Super Fixed Target Beauty Facility at the SSC. In this case the deflection angle of about $100 \mu\text{rad}$ or even smaller may be sufficient for the collider beam halo extraction. The critical bend radius R_c of the (110) silicon channels for channeling of 100 TeV/c protons is about 167 m. The crystal bend radius should be 5–10 R_c to ensure a maximal extraction efficiency. So, the crystal length should be 8–16 cm to obtain the required deflection of $100 \mu\text{rad}$ for channeled particles. The estimations show that the extraction efficiency of the collider beam halo can be about 90%. The extraction of a natural halo provides both the the collider beam collimation and the external beam for experiments with fixed targets.

Primary author: Prof. KOVALENKO, Alexander (Joint Institute for Nuclear Research)

Co-authors: Dr TARATIN, Alexander (Joint Institute for Nuclear Research); Dr SCANDALE, Walter (ROMA1)

Presenter: Prof. KOVALENKO, Alexander (Joint Institute for Nuclear Research)

Session Classification: S4: Charged Beams Shaping