

Advanced Channeling Technologies: Strong External Electromagnetic Fields to Guide Charged & Neutral Beams

Thursday, 12 September 2019 11:00 (20 minutes)

Channeling is the phenomenon well-known in the physics world mostly related to the propagation of the beams of charged particles in aligned crystals. Since the beginning of 1970s channeling of high-energy leptons (electrons/positrons of several MeV up to hundred of GeV energies) and hadrons (protons/ions of tens GeV up to several TeV energies) has been applied at various famous world research centres within different national/international projects related to the phenomenon utilization to shape the beams as well as to produce high power x-ray and gamma radiation sources.

However, recent studies have shown the feasibility of channeling phenomenology application for description of other various mechanisms of interaction of charged as well as neutral particles beams in solids, plasmas and electromagnetic fields covering the research fields from crystal/laser/plasma based undulators and collimators to capillary based x-ray and neutron optical elements.

This review talk is devoted to actual channeling-based projects that have been realizing since so-called renaissance of channeling studies started in the end of last century. The future possible developments in channeling physics will be analyzed within the presentation.

Topic

1. Crystal Channeling and related mathematical, physical and chemical issues

Summary

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Session Classification: Invited Talk