Title: Novel Concepts for High-Energy Particle Production and High-Energy Particle Applications.

Guest Editor:

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Proposal:

The particles energized up to 7 TeV and the high intensity beam of 1 MW have been accomplished by conventional particle accelerator techniques. The particles are accelerated to be directional for fundamental study purpose especially for physics. On the other hand, spherical or two-dimensional high-energy particle output is rather useful for industrial applications. We think that it is a time to break a new frontier of high-energy particle production. The scope of this special issue is devoted to new concepts, theories and key technologies for new particle production methods, and the applications of high-energy particles, including future plans such that it is impossible by recent techniques and requires hardware developments. We invite the authors working on High-Energy Particles to submit the manuscripts on the following topics:

[Part. A] New concepts and theories

- (A.1) High intensity particle accelerators (multi-beams acceleration)
- (A.2) High quality beams (nano-beam)
- (A.3) Super high repetition rate circular particle accelerators
- (A.4) Acceleration concept for short-lived particles, such as muons and pions
- (A.5) Compact particle accelerators by using high electric field produced by space charge effect of high-temperature and high-density plasma
- (A.6) Laser acceleration
- (A.7) New concept by using nuclear fission or other process

[Part. B] Key fundamental technologies developed or promoted rapidly in this decade

- (B.1) High electric field (100 MV/m superconducting and normal conducting resonant cavities, 100 TV/m high intensity laser)
- (B.2) Strong magnetic field (10~100 T by non-destructive pulsed excitation, 100~1,000 T by Mega Gauss technique, 300~10,000 T of laser induced field, 20,000 T by high-intensity laser field)
- (B.3) Short-pulsed superconducting magnets

[Part. C] Complex facilities, application of high-energy particles

- (C.1) Mixed complex of nuclear fission reactors, nuclear fusion reactors and high-energy particle accelerator, such as ADS reactors

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- (C.2) New concept for μCF and other catalyzed nuclear fusion
- (C.3) Applications of high-energy particles to power transmission and communication
- (C.4) 2D or spherical particle output, not line/beam, for industry application
- (C.5) Fundamental studies and the other applications
- (C.6) Industry applications of elementary particles (muon tomography)
- (C.7) Future plans of fundamental science

If you are interested in contributing to this special thematic issue, please send your abstract / manuscript as soon as possible. Further, you are requested to forward this invitation among your colleagues who are specialized in this field.

Please follow the Author's Guidelines before submission of your manuscript:

Author's Guidelines

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