Project: Facility for Antiproton and Ion Research (FAIR)

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Power converters for electromagnets in FAIR: Indian in-kind contribution

Abstract:

- India is one of the partner countries in the Facility for Antiproton and Ion Research (FAIR), Darmstadt, Germany, holding 3.5 per cent of the FAIR GmbH shares and contributing actively in building the facility. Power converters for electromagnets is one of the major accelerator components identified so far as Indian in-kind contribution to the project in terms of the scale and complexities. It is proposed to contribute nearly 700 power converters of various types and ratings to energize normal and superconducting electromagnets with precise and very stable current to guide the beam of high-energy particles in various parts of FAIR accelerator complex. The talk attempts to highlight the requirements, challenges, work-flow, progress, opportunities and the path ahead in the development of power converters for electromagnets in FAIR.

About the Speaker:

- **Mangesh Borage** received B. E. degree (1993), M. Tech. degree (1996) and Ph. D. (2012) in electrical engineering. He joined BARC, Mumbai in 1994. Since 1995, he is with RRCAT, Indore, where he has developed a large number of power converters for electromagnets in Indus accelerators, Infra-Red Free Electron Laser and other facilities, and, many other specialized applications such as laser diode drivers, super capacitor chargers, high-power inverters etc. He has been closely associated with the FAIR power converter project. He has been involved in the design, prototype development and series production/qualification of the first power converter type recently dispatched to FAIR. He leads a Committee which monitors and facilitates the progress of manufacturing and qualification of power converters at ECIL and acts as an interface between FAIR and ECIL. He has authored nearly 80 papers in peer reviewed national and international journals and conferences. Dr. Borage is recipient of University Merit Certificate from Shivaji University, Kolhapur, India in 1993, Dr. Homi Bhabha Award at BARC, Mumbai, India in 1995 as well as DAE Excellence in Science, Engineering and Technology Awards, namely, Scientific and Technical Excellence Award in 2012 and Group Achievement Awards in 2008 and 2016.