

## Future Facility for Nuclear Physics in India?

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For the past 30 years we have utilised extensively the stable and weakly bound projectiles from Pelletron (augmented by LINAC in 2001) accelerator facility in Mumbai, that has contributed significantly to the most of our present understanding of nuclear properties of nuclei mainly near the valley of beta stability. Now it is need of the time to move to the next step, to match with the international level, towards radio-active ion beam (RIB) facility for performing forefront research in nuclear physics by studying nuclei far from stability. Production of proton rich radioactive nuclei is through fusion-evaporation reactions between light ion beams or via spallation in the direct targets while, neutron rich radioactive nuclei are produced only through fission of actinide targets bombarded with protons, fast or thermal neutrons and high-

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energy bremsstrahlung gamma rays (photo-fission) etc. Out of the two methods to produce RIB, In-Flight Technique using projectile fragmentation and Online Isotope separation (ISOL) with re-acceleration, the later appears to be a more feasible option for us. The source of primary beam for ISOL method could be electron, proton driver accelerators or thermal neutrons from reactor. The best possible route for RIB between high current proton driver and thermal neutrons from high flux research reactor will be discussed that will be complimentary to the planned RIB facility in India based on photofission. Short term and long term based research and development projects towards this direction will be presented.