

Project “SHINE” on investigation of nuclear power production with ADS systems at acceleration complex NICA

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An long-term experimental and theoretical study of interaction of high intensity proton and light ion beams with bulk heavy targets provided a new concept of efficiency of light ion beams, as compared to proton beams for ADS systems. Energy gain calculations for different types of accelerators in ADS scheme are presented. These calculations show that light ion beams have an advantage over other beams, which results in radical reduction of the beam energy, as compared to proton energy, and consequently, the size of required accelerator machines. The construction of a specialized beam line and experimental zone SHINE will be completed by the end of 2022–beginning of 2023. First experiments at extracted beams of the NICA acceleration complex are planned in the beginning of 2023.