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Current Results of Ion Driver LINAC-100 Development for New Rare Isotope Facility DERICA at JINR

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DERICA (Dubna Electron-Radioactive Ion Collider fAcility) is the new rare isotope facility project under development at JINR *. DERICA is proposed as the next step in RIB facilities development and construction. It is planned that in the DERICA project the RIBs produced by the DERICA Fragment Separator, are stopped in a gas cell, accumulated in the ion trap and then transferred to the ion source/charge breeder, creating the highest possible charge state for the further effective acceleration (system {gas cell - ion trap - ion source/charge breeder}). From the accelerator point of view, DERICA facility will include CW driver LINAC-100 (energy up to 100 MeV/u for Uranium and up to 50 MeV/u for Calcium ions), fragment separator, re-accelerator LINAC-30 (energy up to 30 MeV/u with the possibility of broad regulation), fast ramping ring (energy <300 MeV/u), collector ring and electron storage ring. Driver LINAC-100 as a complex facility consists of the normal-conducting front-end (or two front-end separately for heavy and light ions) and the main superconducting part. It was proposed to use one or two strippers to increase the charge state of heavy ion beam and to decrease length and cost of LINAC-100. The general concept of DERICA accelerator complex, LINAC-100 and LINAC-30 layout and results of the beam dynamics simulation will be presented in this report.

- A.S. Fomichev, L.V. Grigorenko, A.L. Barabanov et al., Scientific program of DERICA – prospective accelerator and storage ring facility for radioactive ion beam research, <http://aculina.jinr.ru/pdf/DERICA/DERICA-for-ufn-8-en.pdf>

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