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The N = 126 Factory

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The production of exotic nuclei at the vicinity of the last abundance peak of the rapid-neutron capture (r-) process as for a long time pose a challenge. A new facility, called the N=126 Factory is currently under construction at Argonne National Laboratory and aims at undertaking this challenge by producing these exotic nuclei via multi-nucleon transfers reactions. The facility will first include a large-volume gas cell to collect and thermalize the reaction products. Then, upon extraction from the gas cell and radio-frequency quadrupole (RFQ) ion guide, the ion beam will be separated by a high-resolution mass separator magnet before being bunched in a RFQ ion cooler-buncher. The produced bunches will then be sent to a multi-reflection time-of-flight mass spectrometer (MR-ToF) for the removal of isobaric contamination. The first experimental equipment to take beams from the N=126 Factory will be the Canadian Penning Trap and several mass measurements proposals aimed at studying mass modeling predictions for the r-process near the N=126 and in the rare-earth region has already been accepted. The status of the N=126 Factory capabilities and construction status will be presented.
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