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TRIGA-TRAP: Mass measurements on exotic and heavy nuclides

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The TRIGA Mainz research reactor offers unique possibilities for online mass measurements on neutron-rich isotopes as produced by fission of U-235, Pu-239 or Cf-249 targets. A new Penning trap mass spectrometer will be installed, featuring not only the commonly used time-of-flight resonance technique, but also the non-destructive narrow-band image current technique, enabling the detection of a single singly-charged ion stored in the trap. TRIGA-TRAP is the first online mass spectrometer for singly-charged heavy ions using this image current detection technique in combination with cryogenic Penning traps. In case of many heavy and superheavy nuclides, the production rates are often less than a few ions per second, but some isotopes exhibit comparably long half-lifes in the order of seconds, which allows for repeated measurement cycles of the same trap content.
The status of TRIGA-TRAP will be presented.

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