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Fission isomer studies with the FRS

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The 'island' of fission isomers identified in the actinide region ($Z = 92 - 97$, $N = 141 - 151$) originates from the multi-humped fission barriers, which can be described as the result of superimposing microscopic shell corrections to the macroscopic liquid drop barrier. For the first time, fission isomers were studied using the fragmentation of 1 GeV/u ^{238}U projectiles rather than light-particle induced reactions currently in use. The projectile fragmentation gives access to isotopes that are hard or impossible to reach by light particle reactions. In-flight separation with the FRS allows for studying fission isomers with short half-lives. Most importantly, it provides beams with high purity and enables the event-by-event identification. Furthermore, different detection methods such as decay and mass spectrometry have been used to identify the fission isomers within a half-live range from 50 ns to 50 ms. In this contribution, the experiment performed in FAIR Phase-0 and its first results of fission isomer studies with the FRS at GSI will be presented.

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