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## Perspectives for gamma-ray spectroscopy at FAIR

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Nuclear structure studies at FAIR will be pursued within the NUSTAR scientific pillar. Gamma-ray spectroscopy in particular is dealt with in the HISPEC/DESPEC project. The HISPEC experiment aims for in-beam investigations, employing exotic heavy-ion beams both at relativistic and at Coulomb barrier energies. The high-energy programme at the Super-FRS of FAIR will employ the AGATA gamma tracking detector array and the LYCCA particle detection array combined with a large acceptance dipole magnet for the unique determination of projectile-like particles to distinguish Coulomb excitation, knock-out and secondary fragmentation reactions. In addition a slowed-down beam set-up with ultrathin particle detectors will enable studies using classical reaction types, i.e. transfer, multiple Coulomb excitation, deep inelastic reactions.

DESPEC decay spectroscopy, in particular following beta- and alpha-decay will be possible with the active implantation set-up AIDA in combination with the compact DEGAS gamma array. DEGAS will have a significantly higher efficiency and sensitivity as the current benchmark array RISING. The active/passive shielding of DEGAS will open new perspectives for isomer decay experiments. The set-up is planned to be already available for experiments from 2018 on at the FRS of GSI, employing the high beam intensities from SIS18, the upgraded injector of the FAIR facility. The physics programme will concentrate on very heavy nuclei far off stability, with investigations of isotopes around  $N=126$ , important for our understanding of the r-process nucleosynthesis.

**Primary author:** Dr GERL, Juergen (GSI)

**Presenter:** Dr GERL, Juergen (GSI)

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