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From massive stars to neutron-skins: physics in the R3B collaboration at GSI

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The Reactions with Relativistic Radioactive Beams (R3B) collaboration at GSI provides a versatile experimental setup using high efficiency and resolution detectors covering a large range of acceptance. The combination of the versatile experimental setup and the fragment separator (FRS) allow one to explore a wide range of physics using relativistic radioactive beams in inverse-kinematics. In 2021 alone, the physics explored ranged from characterizing fission reaction mechanisms and topography of neutron-deficient nuclei in the mass range of A=180-210 to constraining the density dependence of the equation of state using neutron-removal cross sections in tin isotopes to understanding the evolution of massive stars after the helium burning phase through Coulomb dissociation of O-16 into C-12 and He-4. I will be discussing the physics explored within the collaboration and how the experimental configuration allows this. If time permits, I will also discuss future experiments.

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