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The 12C+12C reaction at the Bellotti Ion Beam Facility - The setup development

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The 12C+12C fusion reaction plays an significant role in our understanding of heavy element nucleosynthesis, as well as supernovae of type Ia. Two of its channels, namely ^{12}C(^{12}C,p)^{23}Na and ^{12}C(^{12}C,α)^{20}Ne are currently under study at the Bellotti Ion Beam Facility within an energy range from 2 MeV to 3.5 MeV. While the first phase is focussing on 2.0 MeV to 2.2 MeV, where there is no direct measurement as of today, future upgrades will try to cover the entire Gamow window.
The experimental approach is based on water-cooled, solid graphite targets, as well as a 150% HPGe detector and a segmented NaI detector in close geometry surrounded by a massive lead castle. This contribution will report on the development of the experimental setup, as well as on a dedicated target study, which was done at the Felsenkeller shallow-underground laboratory in Dresden.

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