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# Coulomb dissociation of $^{16}$O into $^{4}$He and $^{12}$C

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Over the last decades huge efforts were made to determine the $^{12}C(\alpha,\gamma)^{16}O$ cross section, as it is key to understand the evolution of stars. Using direct methods with stable targets and a low-energy ion beam poses significant challenges to the experimental setup and data analysis. Center-of-mass energies down to 1 MeV were reached with sometimes large uncertainties of up to 100%.
Indirect methods propose to bridge the gap towards the stellar energy regime at a center-of-mass energy of 300 keV. Different indirect approaches have been developed posing the Coulomb dissociation as particularly promising.
Within the FAIR Phase-0 campaign at the GSI Helmholtzzentrum für Schwerionenforschung facility in Darmstadt, we performed the measurement of the Coulomb dissociation of $^{16}$O into $^{12}$C and $^{4}$He with a beam energy of 500 MeV/nucleon. High beam intensities of $10^9$ $^{16}$O ions per second made radical changes of the setup at R$^3$B necessary to allow the passage of the unreacted $^{16}$O ions, while $^{4}$He and $^{12}$C would hit the detectors' active areas.
We expect a significant reduction of uncertainties in the low-energy range by validation against data from previous measurements, especially for the $E2$ component and will extend the experimental data to lower energies than ever measured before.
An overview of the experimental method, status of analysis and preliminary results will be presented.

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