

## Nuclei in the Cosmos (NIC XVII)



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# The COREA experiment: measurement of $^{12}\text{C}(\alpha, n)^{16}\text{O}$ reactions with an active-target TPC

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The COREA (Carbon Oxygen Reaction Experiment with Active-target TPC) is an experiment to measure the precise cross-section of the  $^{12}\text{C}(\alpha, n)^{16}\text{O}$  reaction in stellar nucleosynthesis. The reaction rate of  $^{12}\text{C}(\alpha, n)^{16}\text{O}$  determines the  $^{12}\text{C}/^{16}\text{O}$  abundance ratio in the universe and the entire scenario of the stellar nucleosynthesis after the helium burning up to the Fe core in the last years of stellar life. We are developing a novel detector system consisting of an active-target time projection chamber in a conduction-cooled superconducting magnet of the magnetic field up to 3 T and a LaBr<sub>3</sub> gamma detector array. In this talk, we will present the status of the experiment and the development of the unique COREA detector system.

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