

Plenarvortrag

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The CNO cycles — ●MICHAEL WIESCHER — Department of Physics,
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It is 80 years ago that the Bethe-Weizsäcker or CNO cycle was identified as a first catalytic reaction process for converting hydrogen at stellar temperatures to helium. This process was first proposed as a possible source for solar energy, but that idea was soon dismissed and the pp-chains are now considered to be the dominant energy generating fusion mechanism. Yet, the CNO cycles continue to play a unique role in the field of quiescent and explosive nuclear astrophysics. This talk will provide an overview about the importance of the CNO cy-

cles today: as source for CNO neutrinos providing information on the metallicity of our sun, as energy source for massive stars dictating their life-span, as clock for the age determination of globular clusters and the universe, and as trigger for the onset of a thermonuclear runaway in cataclysmic binary stars such as novae and X-ray burst. In that context, measurements of nuclear reactions associated with the CNO cycles have opened new major experimental directions in low energy nuclear physics, the development of radioactive beam facilities and the development of underground laboratories for accelerator based experiments. The study of CNO associated reaction have been a driving force for the progress of nuclear physics and astrophysics alike.