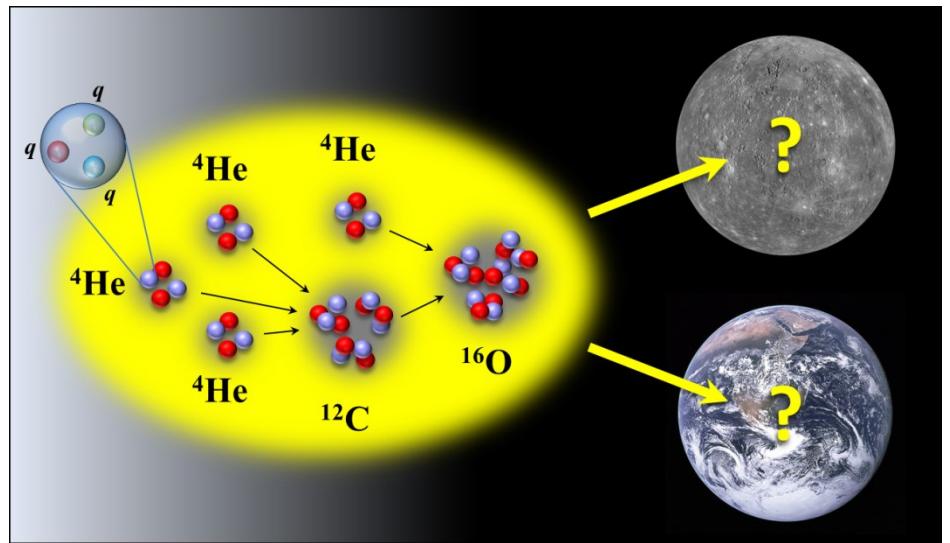




# Life on Earth – An Accident?

Tuesday, 13 June 2017, 16:45 h  
DESY Auditorium

**Ulf-G. Meißner**  
(Univ. Bonn & FZ Jülich)



In this talk, I discuss the sensitivity of the generation of the light and the life-relevant elements like carbon and oxygen under changes of the parameters of the Standard Model pertinent to nuclear physics. Chiral effective field theory allows for a systematic and precise description of the forces between two, three, and four nucleons. In this framework, variations under the light quark masses and the electromagnetic fine structure constant can also be consistently calculated. Combining chiral nuclear effective field theory with Monte Carlo simulations allows to further calculate the properties of nuclei, in particular of the Hoyle state in carbon, that plays a crucial role in the generation of the life-relevant elements in hot old stars. The dependence of the triple-alpha process on the fundamental constants of Nature is calculated and some implications for our anthropic view of the Universe are discussed.

- **Coffee, tea and cookies will be served at 16:30h**
- **After the seminar there is a chance for private discussions with the speaker over wine and pretzels**