

The Physics Case of the Weak Charge of Carbon-12



Monday 18 March 2019 - Friday 5 April 2019

IF-UNAM

Scientific Programme

The objective of this workshop is to study the physics case of a precision measurement of the weak charge of carbon-12 as part of the P2 experiment at MESA. We will discuss the status of radiative corrections (QED, QCD, and electroweak) and other theoretical issues for both, the weak charge and the polarization asymmetry, and how to improve the calculations.

The impact of such a measurement in the context of other precision measurements will be assessed, in particular:

- the proton's weak charge at Jefferson Lab and Mainz;
- the electron's weak charge at SLAC and JLab;
- atomic parity violation in single isotopes and isotope chains;
- coherent neutrino scattering;
- neutrino scattering and oscillation parameters;
- precision measurements at existing and future colliders.

Quark mass determinations from QCD sum rules have some impact on the calculation of the weak mixing angle at low energies and will be another topic.

This workshop will take place in the context of the bi-institutional grant between groups at IF-UNAM and JGU Mainz by CONACyT (Mexico) and DFG (Germany).

