UNIVERSIDAD COMPLUTENSE MADRID

gfn UCM Grupo de Física Nuclear

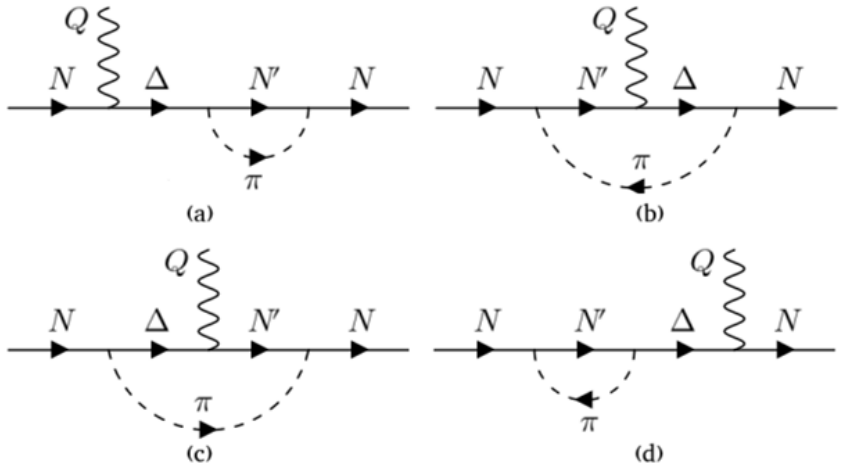
Meson-exchange currents: simultaneous reproduction of the electromagnetic responses of carbon

Tania Franco Muñoz

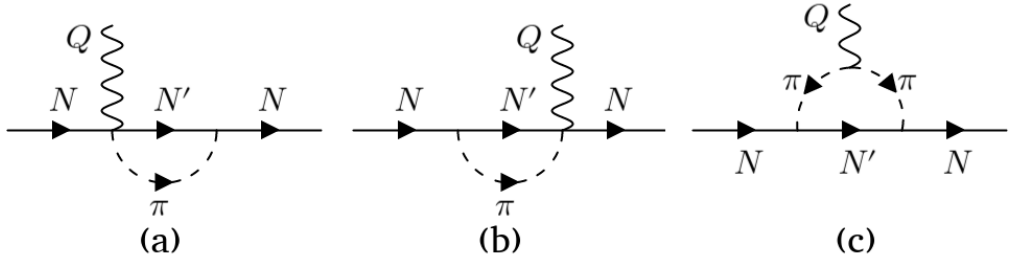
Neutrino-Nucleus Interactions in the Standard Model and Beyond Workshop

Meson exchange currents

- In the **1p-1h channel**, apart from the well-known one-body current operator, we include one-pion exchange effects by incorporating a **two-body meson exchange current operator**.



- **Delta pole mechanism**

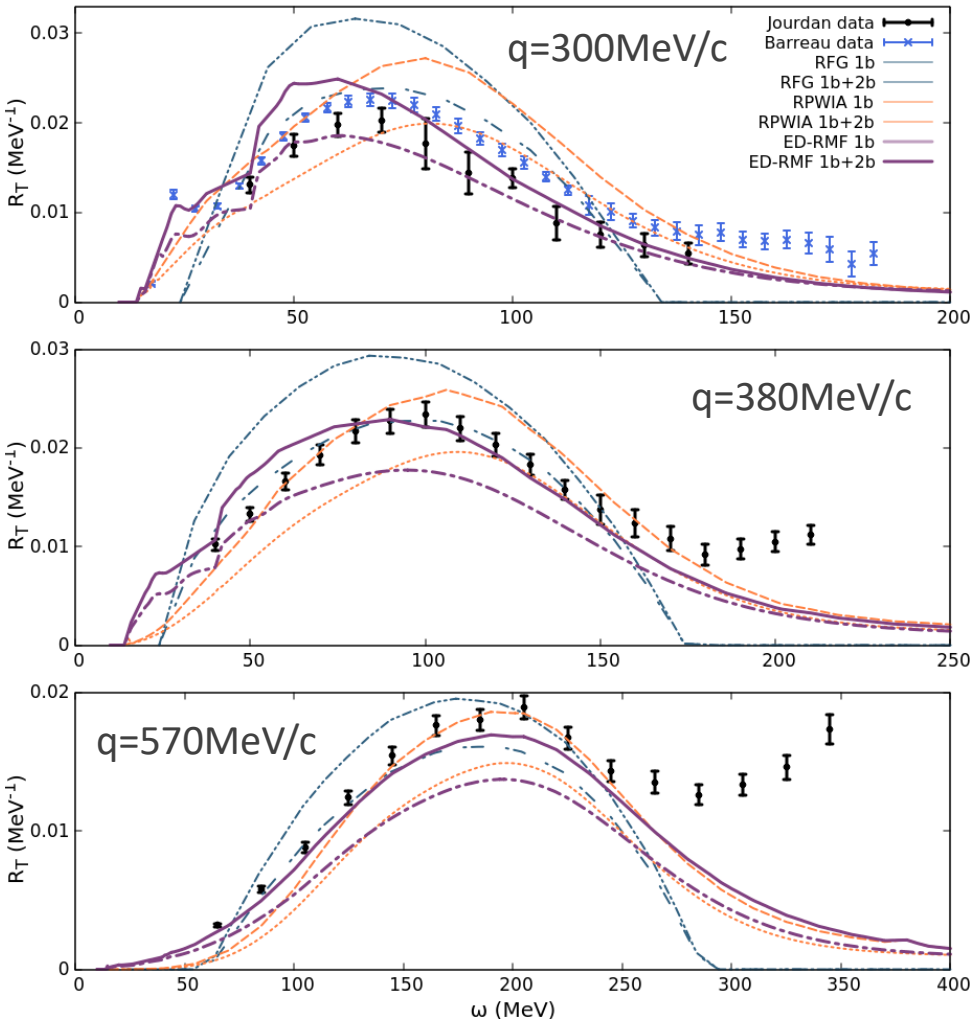


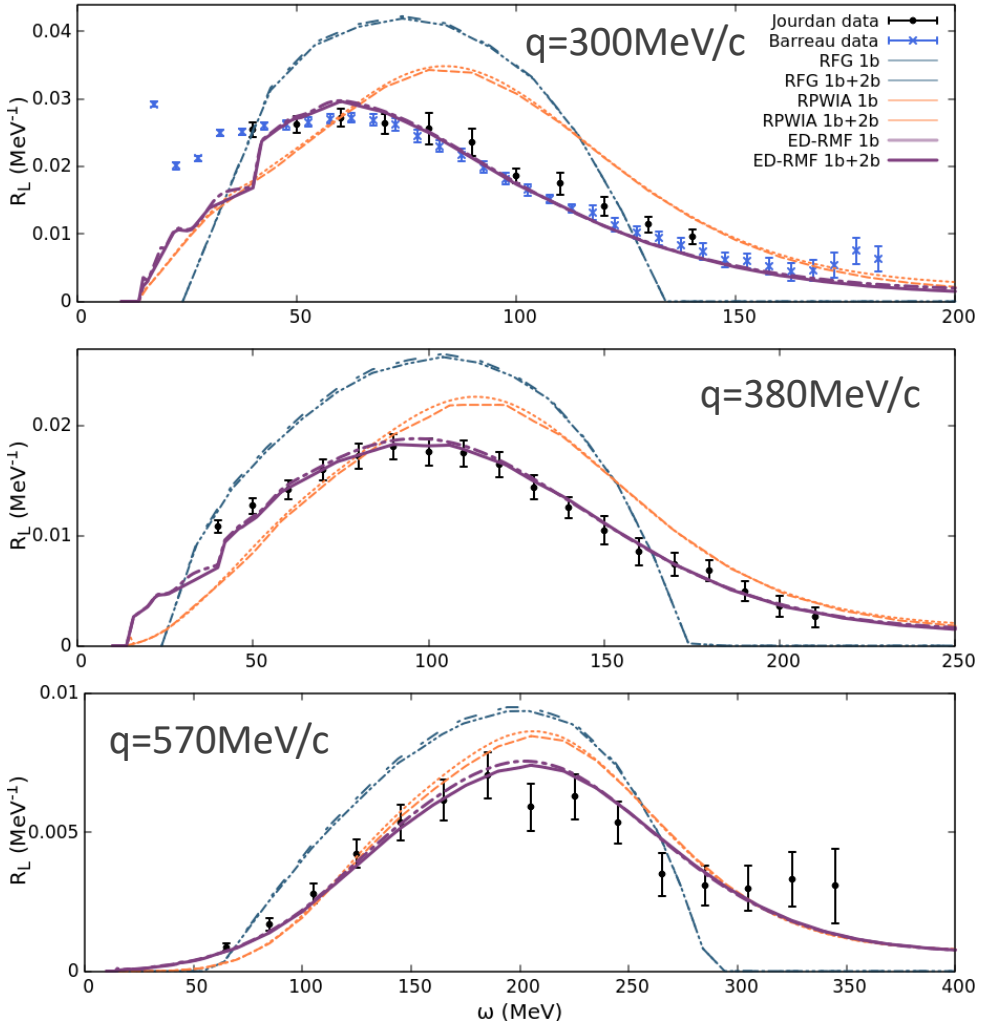
- **ChPT background**

- Theoretical framework
  - **Initial nucleon**: independent-particle relativistic mean-field (RMF)
  - **Nucleus**: shell-model occupations and background due to SRC taken from the Rome spectral function
  - **Final nucleon**: solution of the Dirac equation with relativistic potential

^{12}C electromagnetic responses

$$\frac{d\sigma}{dE_f d\Omega_f} = \sigma_{Mott}\{v_L(R_p^L + R_n^L) + v_T(R_p^T + R_n^T)\}$$





J. Jourdan, Nucl. Phys. A 603, 117 (1996)

P. Barreau et al., Nuclear Physics A 402,515 (1983)

ED-RMF: R.González-Jiménez et al. Phys. Rev. C 100, 045501 (2019)