$\Lambda-$ and $\Lambda\Lambda-$hypernuclear decay predictions in a OME model.

A. Parreño[b], A. Ramos[a] and C. Bennhold[b]

[a] *Departament d'Estructura i Constituents de la Matèria, Universitat de Barcelona, Diagonal 647, 08028 Barcelona, Spain.*
[b] *Center for Nuclear Studies and Department of Physics, The George Washington University, Washington DC, 20052, USA.*

We overview the results of our Meson-Exchange model for the nonmesonic weak decay of single- and double-Λ hypernuclei. This model incorporates the exchange of the pseudoscalar π, η, K octet for the long-range part of the $\Delta S = 1$ weak baryon-baryon interaction, while parametrizing the short-range part through the vector mesons, ρ, ω and K^*. The studied observables are the total nonmesonic decay rate, the partial decay rates (*i.e.* decays induced separately by neutrons and protons in $\Lambda-$hypernuclei, plus $\Lambda-$induced decays in $\Lambda\Lambda-$hypernuclei), the neutron and proton spectra in the final state, and $\mathcal{A}$, the longitudinal asymmetry on the distribution of final protons coming from the decay of polarized hypernuclei. Realistic baryon-baryon forces for the $S = 0, -1$ and -2 sectors are introduced in T-matrix and G-matrix calculations to account for the strong interaction in the final and initial states respectively. In order to obtain the proton and neutron spectra, we use a Monte Carlo simulation to account for the propagation of the outgoing nucleons in their way out of the residual nucleus.

References

[1] A. Parreño, A. Ramos and C. Bennhold, Phys. Rev. C **56**, 339 (1997).
[2] A. Parreño and A. Ramos, Phys. Rev. C **65**, 015204 (2002).
[3] A. Parreño, A. Ramos and C. Bennhold, Phys. Rev. C **65**, 015205 (2002).