to the Δ-propagation in nuclei on a microscopic level.

For an approximate solution of this generalized many-body problem, the ΔN interaction is formulated in the meson-exchange picture and used as input in a simplified Hartree-Fock approach for a single isobar excited in a closed-shell nucleus. Allowing for the scattering of a pion on a correlated ΔN pair, finite range and nonlocal corrections for the $\underset{\sim}{\nabla}\rho^2(r)\underset{\sim}{\nabla}$ term in the π-nucleus optical potential are also investigated.

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On the Absorptive Nuclear Mean Field of a Δ(1236)-Isobar*

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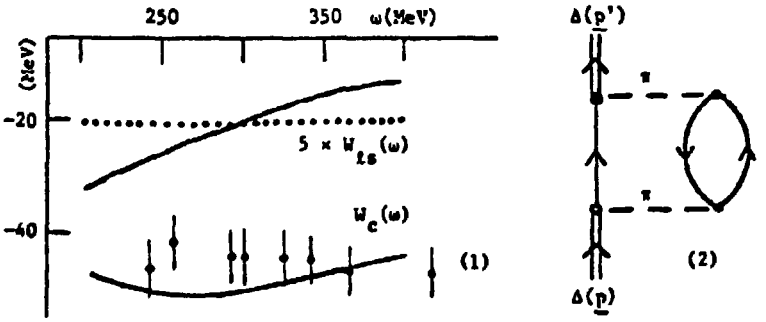
Studies in the Δ-isobar-hole model have shown that besides π-multiple rescattering inelastic corrections are very important for the Δ-nucleus dynamics at intermediate energies. Their parametrization as an energy dependent Δ-nucleus optical potential

$$V_\Delta(r;\omega) = [(V_c(\omega)+iV_c(\omega)) + (V_{\ell s}(\omega)+iW_{\ell s}(\omega))\ \underset{\sim}{L}_\Delta\underset{\sim}{S}_\Delta \frac{1}{\lambda}\frac{d}{d\lambda}]\ \rho_A(r) \quad (1)$$

($\lambda = r/r_o$ with $r_o = 1$ fm; $\rho_A(r)$ and ω are the nuclear density

and the scattering energy, respectively) yields $W_c(\omega)$ and $W_{ls}(\omega)$ for ^{12}C as shown in Fig. 1 (note that $W_{ls}(\omega)$ was assumed to be ω-independent).

We estimate $W_c(\omega)$ and $W_{ls}(\omega)$ in a simple microscopic model. Starting out from the leading diagram in Fig. 2 (as known from $\pi d \to NN$) the resulting highly nonlocal effective Δ-nucleus potential is cast into the local potential of eq. (1) in the limit $K_N \sim 500$ MeV/c $>>$ p,p', where K_N is the typical momentum of the nucleons emitted. For a cut-off mass $\Lambda_\pi \sim M_N$, $W_c(\omega)$ and $W_{ls}(\omega)$ are given by the full lines in Fig. 1 in qualitative agreement with Horikawa, Thies and Lenz.



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* Proc. 9th ICOHEPANS, Versailles, France (1981), K8, pg. 421.

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