

INVESTIGATION OF THE ^{24}Mg -CONTINUUM NEAR MOLECULAR RESONANCES
 BY $^{10}\text{B}+^{14}\text{N}$ AND $^{12}\text{C}-^{12}\text{C}$ REACTIONS

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We have started a more detailed investigation of ^{24}Mg -resonances observed at 33.2, 38.9 and 44.4 MeV excitation, which are believed to have spins 12^+ , 14^+ and 16^+ . Some selected excitation functions are shown for the $^{12}\text{C}-^{12}\text{C}$ entrance channel in Fig. 1 and $^{10}\text{B}-^{14}\text{N}$ in Fig. 2. Most of the exit channels exhibit correlated structure in the near of the 14^+ - and 16^+ - $^{12}\text{C}-^{12}\text{C}$ resonance energies indicated by the dashed lines. The measurements are done at angles close to 0° and 180° , where the cross section of a high spin resonance is expected to be large.

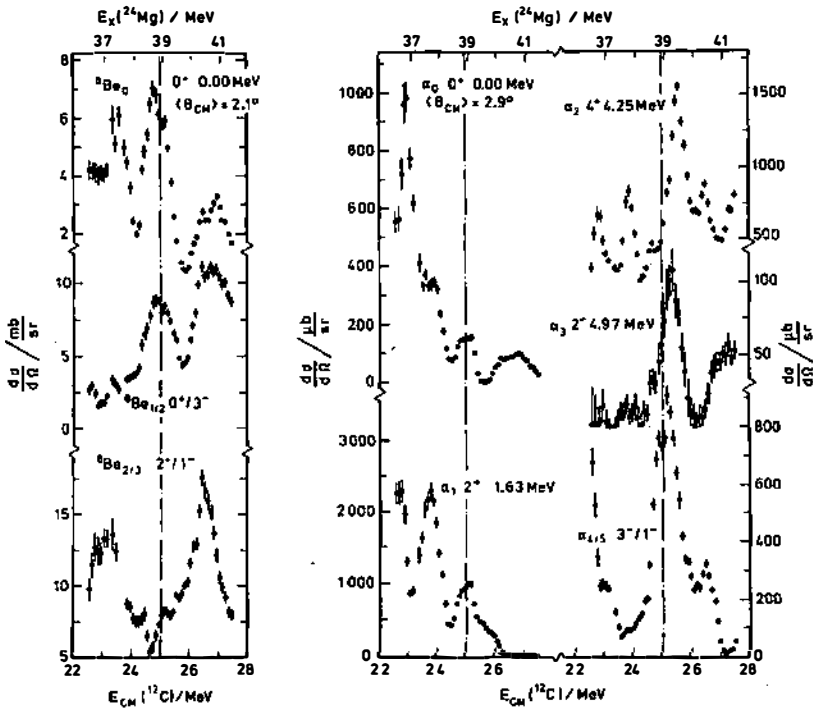


Fig. 1: $^{12}\text{C}(^{12}\text{C}, ^8\text{Be})^{16}\text{O}$ and $^{12}\text{C}(^{12}\text{C}, \alpha)^{20}\text{Ne}$ excitation functions around the 14^+ -resonance at $E_X(^{24}\text{Mg})=38.9$ MeV

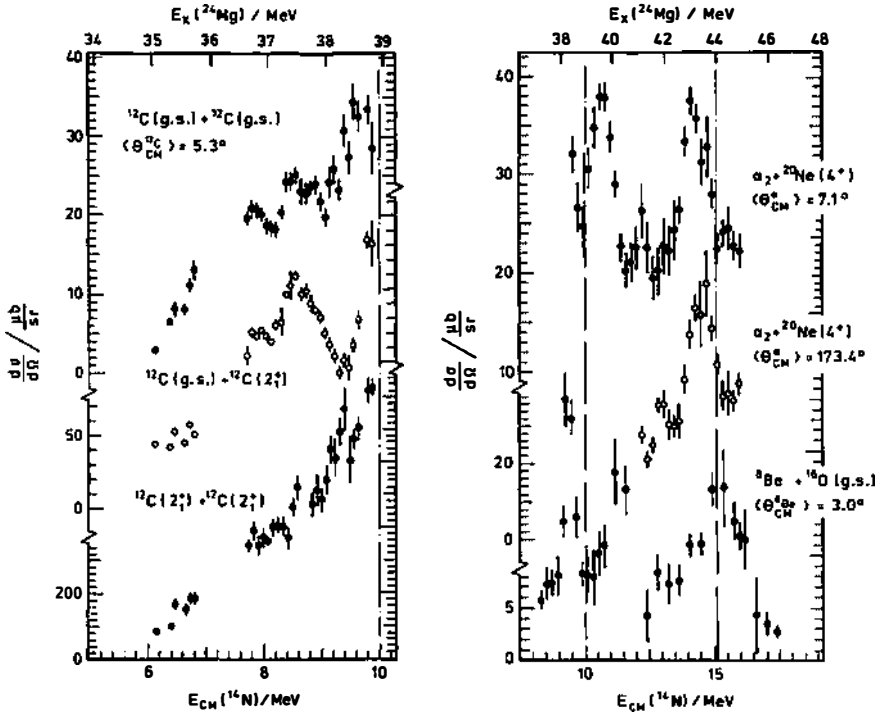


Fig. 2: $^{10}\text{B}(^{14}\text{N}, ^{12}\text{C})^{12}\text{C}$, $^{10}\text{B}(^{14}\text{N}, \alpha)^{20}\text{Ne}$ and $^{10}\text{B}(^{14}\text{N}, ^8\text{Be})^{16}\text{O}$ excitation functions around the ^{24}Mg -resonances

The ^{12}C -particles of the ^{12}C - ^{12}C exit channel are detected by a new annular ΔE -E telescope. A large s.f.b. annular detector is mounted in the gas volume of a cylindrical ionisation chamber with an inner anode tube for the beam.

There is some experimental evidence¹⁾, that not the ^{12}C - ^{12}C but the $2\alpha + ^{16}\text{O}$ -molecular configuration plays the dominant role in these resonances. This is i.e. supported by the lack of pronounced structure in the $^{10}\text{B}(^{14}\text{N}, ^{12}\text{C})^{12}\text{C}$ -reaction. Using different entrance and exit channels should lead to significant variations in resonance strength and help to get more information about the resonance structure.

1) N. Marquardt, to be published