

Decay of a Resonance in ^{18}Ne by the Simultaneous Emission of Two Protons.

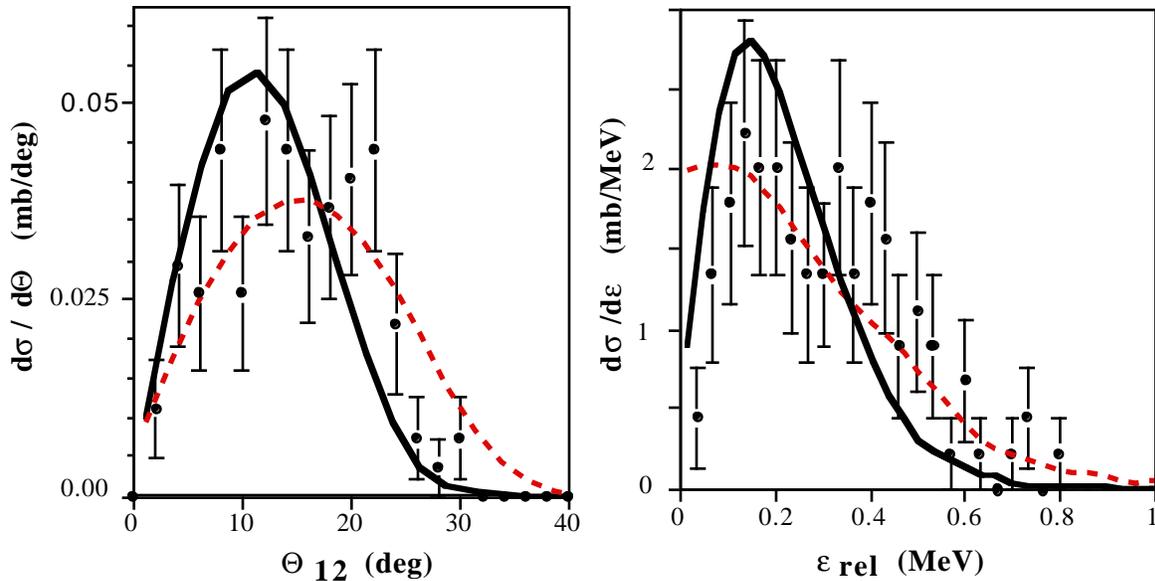
J. Gómez del Campo,¹ A. Galindo-Uribarri,¹ J. R. Beene,¹ C.J. Gross,^{1,2} J.F. Liang,¹
M.L.Halbert,¹ D. W. Stracener,¹ D. Shapira,¹ R.L. Varner,¹ E. Chavez-Lomeli,³
and M.E. Ortiz³

¹ Physics Division ,Oak Ridge National Laboratory, Oak Ridge TN 37831

² Oak Ridge Institute for Science and Education, Oak Ridge , TN 37831

³ Instituto de Física Universidad Nacional Autónoma de México, México 01000 D.F., México

In a recent experiment done at HRIBF ¹ clear evidence for simultaneous two-proton emission from the 6.15 MeV state ($J^\pi = 1^-$) in ^{18}Ne was obtained with the radioactive beam induced reaction $^{17}\text{F} + ^1\text{H}$. The measurements were done bombarding a $40\mu\text{m}$ CH_2 target with a 44 MeV ^{17}F beam. The figure shown below gives in the left panel the opening angle distribution of the two coincident protons and the right panel shows their relative kinetic energy spectrum. The solid curves are Monte Carlo calculations assuming a diproton (^2He) emission and the dashed ones are calculations corresponding to a three body "democratic decay" decay mechanism . As can be seen from the figure the calculations can not differentiate between these two possible modes of simultaneous decay . This is due primarily to the limited angular coverage ($0^\circ \pm 15^\circ$), of the detector used in the experiment . Future plans using larger angular coverage and measuring also resonances at higher excitation energies in ^{18}Ne will be discussed.



1. J. Gomez del Campo et al. , to be published in Phys. Rev. Lett.