

4. Conclusions

The anomalous correlation between Γ_n^0 and Γ_γ for ^{138}Ba reported by Musgrove *et al.* (1975) is now seen to have been caused by an incorrectly assessed prompt background correction. The nucleus ^{140}Ce has several resolved-width resonances with small radiative widths and is perhaps the most sensitive indicator of the magnitude and time dependence of the prompt background correction for γ -ray detectors. We have been unable to determine conclusively whether the width correlation predicted by the valence model is present in the ^{138}Ba and ^{140}Ce nuclides. However, certain resonances are expected to decay predominantly via valence neutron transitions.

References

- Allen, B. J., and Musgrove, A. R. de L. (1978). *Adv. Nucl. Phys.* **10**, 129.
- Allen, B. J., Musgrove, A. R. de L., Macklin, R. L., and Winters, R. R. (1979). In 'Neutron Data of Structural Materials for Fast Reactors' (Ed. K. Böckhoff) (Pergamon: Oxford).
- Bilpuch, E. G., Seth, K. K., Bowman, C. D., Tabony, R. H., Smith, R. C., and Newson, H. W. (1961). *Ann. Phys. (New York)* **14**, 387.
- Bird, J. R., Allen, B. J., Boldeman, J. W., Kenny, M. J., and Musgrove, A. R. de L. (1976). Proc. Int. Conf. on Interactions of Neutrons with Nuclei (Ed. Eric Sheldon) (USERDA: Oak Ridge).
- Boldeman, J. W., Allen, B. J., Musgrove, A. R. de L., and Macklin, R. L. (1975). *Nucl. Phys.* **A 252**, 62.
- Camarda, H. (1979). High resolution neutron total cross section measurement on ^{140}Ce . *Phys. Rev. C* (in press).
- Lane, A. M., and Mughabghab, S. F. (1974). *Phys. Rev. C* **10**, 412.
- Macklin, R. L., and Allen, B. J. (1971). *Nucl. Instrum. Methods* **91**, 565.
- Macklin, R. L., Halperin, J., and Winters, R. R. (1975). *Phys. Rev. C* **11**, 1270.
- Macklin, R. L., Hill, N. W., and Allen, B. J. (1971). *Nucl. Instrum. Methods* **96**, 509.
- Musgrove, A. R. de L., Allen, B. J., Boldeman, J. W., and Macklin, R. L. (1975). *Nucl. Phys.* **A 252**, 301.
- Sullivan, J. G., Warner, G. G., Block, R. C., and Hockenbury, R. W. (1969). Rensselaer Polytechnic Institute Rep. No. RPI-328-155.

