

# Reconsideration of the Importance of Wigner's Supermultiplet Symmetry

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## ABSTRACT

Wigner's Supermultiplet Symmetry, underpinned by the  $U(4)$  group, has long been recognized as important in nuclear physics. But its use has been limited because comprehensive codes for evaluating  $U(4)$  coupling and recoupling coefficients have been limited at best and generally not available. It seems this is about to change for reasons that will be addressed, and hence it is also time to re-think use options; especially a re-opening of doors that have been shuttered for years but that even today have great potential for yielding ever better insights into the real nature of nuclear forces; what underpins them; or is there a better way to see these as residual effects of the strong interaction that binds hadrons into nucleons? Also, might it be better to set standard nuclear models aside – at least for a short while – and explore what has recently been proffered to be a field-theory approach to achieving a much deeper understanding of the real structure of nuclear matter? Questions such as these will be raised, perhaps with a few answered, but most importantly to leads us all into unfamiliar territory! So, welcome aboard; it seems this train may be loaded with many questions; perhaps with some answers; but setting all else aside, it is most definitely ready to leave the station! Bon Voyage!

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