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Unitary interaction geometries in few-body systems

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We present an analysis of systems of up to 5 particles which are characterized by a subset of resonantly interacting pairs. The focus is on the renormalization-group (RG) behaviour of the 3-, 4-, and 5-body, equal-mass ground states. The RG/scaling behaviour is studied as a function of the various possibilities to bind the respective systems with resonant pair interactions.
Based on numerical calculations for the pertinent spectra in the zero-range limit of the interactions, and by a supporting analytical argument, we conjecture two elemental universality classes associated with discrete scaling factors of 22.7 and 1986.1, respectively; Elemental, because an arbitrary set of resonant pair interaction belongs to either class.
We advance a graphical criterium for every pair-interaction set based on so-called {\it unitary graphs} which assigns the respective topology to one of the two classes. Finally, an outlook is presented on the significance of the approach to the cluster-state-doubling phenomenon observed at thresholds defined by Efimov trimers.

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