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From fluid dynamics to RG flow studies of phase transitions

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We employ a numerical method borrowed from fluid dynamics to solve functional renormalization group flow equations for systems with multiple competing order parameters. We demonstrate the application of our approach with the aid of zerodimensional quantum field theories which allow us to mimic specific situations also encountered in higher-dimensional theories. Our results suggest that this novel approach indeed represents a promising tool for investigations of spontaneous symmetry breaking and phase transitions in the theory of the strong interaction.

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