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Novel critical phenomena in compressible polar active fluids

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Active matter describes the collective properties of particles that either possess internal energy or harness energy from the environment to actively self-propel. Diverse biological many-body systems, like tissue, or swarms of birds, fish or bacteria, are thus of this type, and many of which can be modelled as polar active fluids. Since these nonequilibrium systems break conservative laws that are intrinsic to thermal systems, such as energy and momentum conservation, diverse novel nonequilibrium phenomena are expected. In this talk, I will describe the use of the functional renormalization group to discover for the first time new universality classes in compressible polar active fluids that correspond to a multicritical point of these active systems. arXiv:2205.01610

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