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Symmetry breaking restoration by acceleration

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In this work we consider the ontological status of the Unruh effect. Is it just a formal mathematical result? Or the temperature detected by an accelerating observer can lead to real physical effects such as phase transitions? In order to clarify this issue we use the Thermalization Theorem to explore the possibility of having a restoration of the symmetry in a system with spontaneous symmetry breaking of an internal continuous symmetry as seen by an accelerating observer. We conclude that the Unruh effect is real physical effect rather than a formal result, giving rise, in the particular example considered here, to a phase transition (symmetry restoration) in the region close to the accelerating observer horizon. We apply our results also to the region close to BH horizons.

Primary author: DOBADO GONZALEZ, ANTONIO

Presenter: DOBADO GONZALEZ, ANTONIO

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