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Abstract for an Invited Paper
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Emergent dimensions and quantum critical points¹

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When quantum many-body systems are strongly correlated, the underlying particles may dynamically organize themselves to show novel collective behaviors. Under certain conditions, collective fluctuations behave as if they are living in a space which has one more dimension than the space where the original particles are defined. In this talk, I will discuss about an example where an ‘external’ space emerges at a quantum critical point of a non-abelian gauge theory. A close analogy will be drawn between this phenomenon and fractionalization which can be viewed as an example of emergent ‘internal’ spaces. I will also discuss about non-trivial quantum orders associated with emergent dimensions.

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