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# Physics-induced functional RG flows

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The key to understanding intricate dynamics in QFTs is a representation in terms of the relevant degrees of freedom which are usually associated with emergent composites (e.g. observable particles, but also Cooper-pairs, resonances...) and may change with the scale. In this talk, we aim for a combination of Machine learning methods and the functional Renormalisation Group (fRG) to identify an optimal representation of physical quantities and/or a reduction of computational complexity.

The fRG is a powerful tool which allows to monitor the successive emergence of physical phenomena along a coarse-gaining trajectory. One of its successes is the quantitative resolution of competing order effects in strongly correlated systems and consequently the description of phase transitions. So what mechanisms does the fRG draw upon which allow to resolve phenomena hidden in large amounts of lattice field theory simulation data?

We focus on general scale dependent reparametrisations during the RG flow, so called flowing fields, which can be used to improve the representation of relevant degrees of freedom and hence optimise the physics content of the approximation at hand:
Flowing fields are able to uncover trivialising maps or provide insights into their construction, establishing a connection to normalising flows within an RG context.

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