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Asymptotic safety and fixed points of gauge theories

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Ultraviolet fixed points of the renormalisation group flow allow one to define quantum field theories which are valid up to arbitrarily high energies. However, finding fixed points is a difficult problem in general as one has an infinite number of couplings to deal with. In this talk I will discuss how restricting to the case of weakly coupled four-dimensional gauge theories allows for a complete classification of the types of fixed points which are possible, and the role Yukawa couplings play in offering a unique mechanism to allow such non-trivial fixed points to be ultraviolet.

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