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Towards a determination of the ratio of the kaon to pion decay constants

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The $SU(3)$ flavour symmetry breaking expansion in up, down and strange quark masses is extended from hadron masses to meson decay constants. This allows a determination of the ratio of kaon to pion decay constants in QCD. Furthermore when using partially quenched valence quarks the expansion is such that $SU(2)$ isospin breaking effects can also be determined. It is found that the lowest order $SU(3)$ flavour symmetry breaking expansion (Gell-Mann-Okubo) works very well. Simulations are performed for 2+1 flavours of clover fermions at 4 lattice spacings.

Primary author: Dr HORSLEY, Roger (University of Edinburgh)

Presenter: Dr HORSLEY, Roger (University of Edinburgh)

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