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Charged and neutral pion magnetic polarisabilities using the background field method

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The magnetic polarisability of the pion is calculated at a range of quark masses using the background field method. These results are facilitated by the use of the background-field corrected clover fermion action which removes the unphysical quark mass renormalisation due to the Wilson term in a background magnetic field. A magnetic-field dependent quark-propagator projector enables the ground state isolation necessary to construct the relativistic energy differences used to extract the magnetic polarisability. The excellent signal-to-noise properties of pion two-point correlation functions produces precise values for both the charged and neutral pion.

Primary authors: Dr BIGNELL, Ryan (Swansea University); LEINWEBER, Derek (CSSM, University of Adelaide); Dr KAMLEH, Waseem (University of Adelaide)

Presenter: Dr BIGNELL, Ryan (Swansea University)

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