

NUCLEON MAGNETIC PROPERTIES FROM LATTICE QCD & THE BACKGROUND FIELD METHOD

Ryan Bignell¹, Waseem Kamleh¹, Derek Leinweber¹

¹ Special Research Centre for the Subatomic Structure of Matter, Department of Physics, University of Adelaide, South Australia 5005, Australia

A uniform background field is used to investigate the magnetic moment and the magnetic polarisability of the neutron and proton. A difficulty that arises with the introduction of the background field are the Landau energy levels. Here the energy of the nucleon is extracted using a novel projection method that accounts for these contributions. Using the energies produced by a number of different magnetic field strengths, the magnetic properties are extracted with unprecedented accuracy.