

A Resistive Combined Function Magnet Suitable for Use Inside the HERA ep Interaction Regions,
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S. WIPF, G. WÖBKE, DESY - For the HERA luminosity upgrade program a normal conducting magnet was investigated for use in the interaction region. We present an unconventional air-coil combined function magnet design which provides both vertical focusing and horizontal bending. A block coil configuration, with midplane conductors omitted on one side, is adopted for providing high field quality, $\Delta B/B = \pm 5 \times 10^{-4}$ and yet passing synchrotron radiation via a horizontally extended vacuum beam pipe. The design magnetic length is 1.98 m, maximum gradient 7.6 T/m, and average vertical field 0.185 T. 2D and 3D field calculations are shown and two solutions for producing the coil heads, forging and selective laser sintering, are discussed.