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ORAL PRESENTATION  DISSERTATION ABSTRACT

PAPER PRESENTED BY ALAN H. BRIDLE  
(Please Print, Must be First Author)

A Magnetoionic Medium in the Radio Galaxy 3C272.1 (M84)

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We have imaged the linearly polarized emission from the weak radio galaxy 3C272.1 (M84) with 3"9 (290 pc) resolution using the VLA at 1.4 GHz and 4.9 GHz. The results show a banded pattern of E-vector rotation across the radio source. The associated Faraday rotation measure (RM) pattern has been determined using 2.7-GHz data from the Cambridge 5-km telescope to eliminate ambiguities. The RM fluctuates by  $\pm 30 \text{ rad.m}^{-2}$  over 90" (7 kpc at M84). These fluctuations are larger than would be expected from the foreground medium in the Galaxy at this galactic latitude ( $b = 75^\circ$ ). The RM also changes sign abruptly across the nucleus of M84. We therefore associate the RM pattern with a magnetoionic medium  $\sim 10$  kpc in extent within M84. The absence of a similar pattern in the depolarization between 1.4 and 4.9 GHz implies that the magnetoionic medium is in front of, rather than mixed with, the radio source. The medium may correspond to the diffuse component of the soft X-ray emission from M84, in which case the mean field strength along the line of sight through it would be 0.15 to 0.3  $\mu\text{gauss}$ . There must be a large-scale reversal in this magnetic field across the face of 3C272.1.

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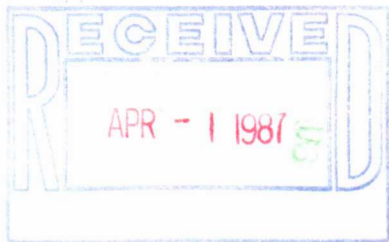
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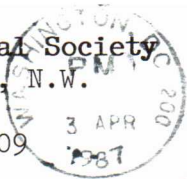


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