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Faraday Rotation in Air: Combining Brute Force and Finesse¹ TERRY CHAVEZ, SHAUN SCHRUBBE, WILLIAM BRANDON, University of North Carolina at Pembroke — Because of the weak circular birefringent response to axial magnetic fields, and hence low values of the Verdet constants, only a few research groups have successfully measured non-resonant Faraday Rotation in diamagnetic gases. In contrast to those complicated schemes, we utilized a straightforward technique resulting in accurate measurements of the Faraday rotation in air. Our method combines brute force (a magnetic field intensity of around 210 gauss over a 60 cm length), and finesse (differential phase sensitive detection), resulting in accurate values for the Verdet constant of air, V_{air} , at a dozen wavelengths ranging from 405-800 nm, which can be modeled as a mixture as $V_{air} = (0.7809 V_{N2} + 0.2095 V_{O2})$.

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