



So

$$\frac{D_2}{D_1} = -\frac{B_1}{B_2} = \frac{(\nu - nu_o) \sin^2 \theta \pm \sqrt{(\nu - \nu_o)^2 \sin^4 \theta + 4\nu_g^2 \cos^2 \theta}}{2i\nu_g \cos \theta}$$

Define  $\tan 2\psi = \frac{2\nu_g \cos \theta}{(\nu - \nu_z) \sin^2 \theta}$ , then  $\frac{D_2}{D_1} = -i \cot \psi$  or  $\frac{D_2}{D_1} = i \tan \psi$ . Both are elliptically polarized.

So Faraday rotation exists.