

Concepts explored in Suresh & Cordes 2019

Journal Club, Jan 23 2019, Ralph Eatough

- **Faraday Effect**, more specifically **Birefringence** (especially in recently discovered extreme environments viz. GC, FRBs & Crab)
- **Dispersive delays** due to DM, RM & EM..... $t_d = t_{DM} + t_{RM} + t_{EM}$.
- High RM gives rise to TOA delays between circular pols and phase perturbation - **polarization splitting!**
- **Birefringent refraction** also considered - larger effect than RM splitting.
- **Plasma lensing** gives rise to amplitude effects.
- x3 test cases, FRB 121102, PSR J1745-2900 and Crab Nanoshots.
- Two dimensional coherent dedispersion by accounting for phase delay also due to RM. DM and RM simultaneously measured.
- Noise statistics of pulses that have experienced birefringence different to pulses where this didn't happen. Cross-correlation can show this.