

## Should FIRE Consider using ECH Preionization?

---

- ECH Preionization is known to reduce loop voltage (~ 50%) and field quality requirements (> 50%) for plasma start-up (B. Lloyd, et al, Nuclear Fusion, 31, 1991)

- For FIRE @ 10 T the required frequency would be

$$f \text{ (hz)} = 2.8e10 * B \text{ (Tesla)}$$

$$= 280\text{GHz}$$

- According to T Bigelow (RF expert from ORNL) ECH preionization in the 300GHz/100kW/50mS range using existing Gyrotrons would be entirely feasible.

Should this be considered on FIRE to reduce demands on the PF coil system?