Novel Concept for Disruption Mitigation in the ADITYA - U tokamak by Inductively Driven Impurity Pellet Injector

- ✓ Particles injected using an Inductively-Driven Pellet accelerator and Injector
- ✓ Pellets reached hot plasma core in a few milliseconds.
- ✓ Radiated away its thermal energy, causing a rapid quench of plasma current.
- ✓ Injected Particles: Lithium Titanate/Carbonate
- ✓ Particle size ~ 50 micron
- ✓ Amount injected ~ 50 – 200 mg
- ✓ Particle velocity ~ 200 m/s
- ✓ Particles reached ADITYA-U core in ~ 3 - 4 ms
- ✓ Current quench time varied with injected amount
- ✓ Lithium Titanate induces faster current quench time
- ✓ Bolometer Array shows radiation starts from the center
- ✓ Soft X-ray Array shows complete plasma core collapses at once

First time an electromagnetic pellet injector used to fire the pellets into the tokomak

Significant development towards ITER disruption control