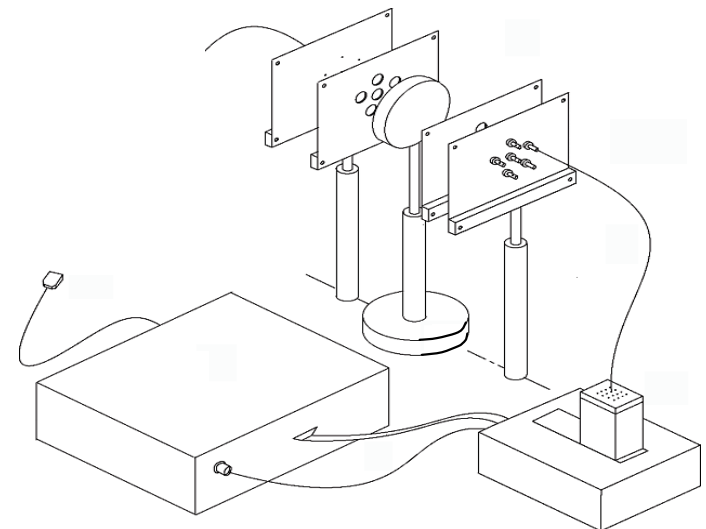


FIDA systems: present capabilities and planned upgrades

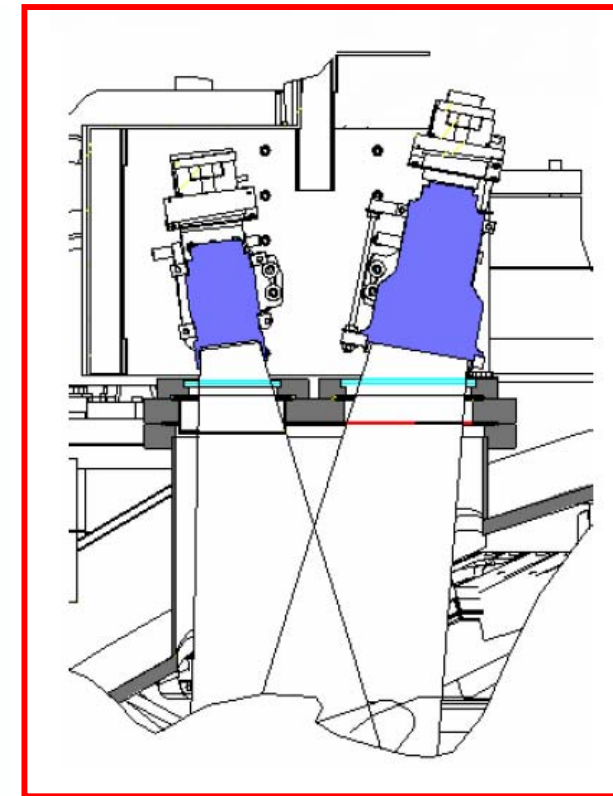
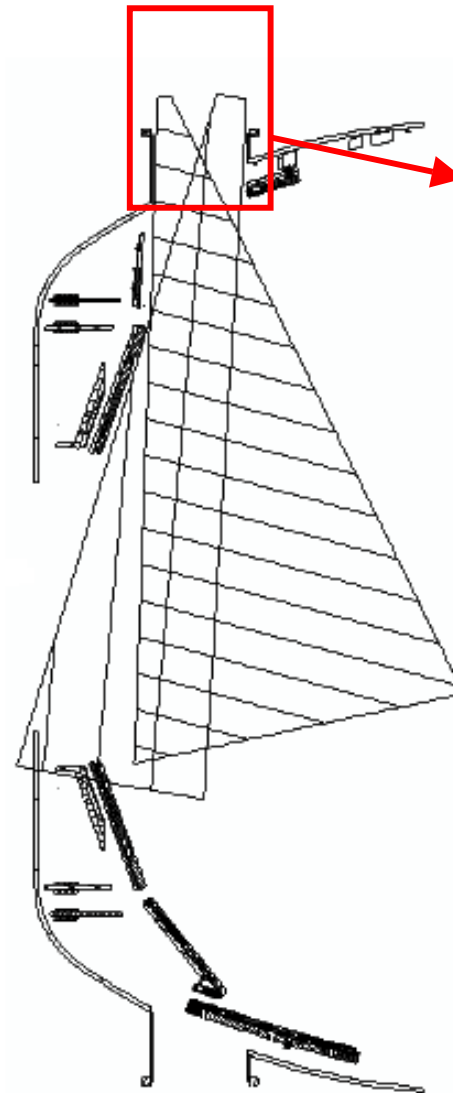
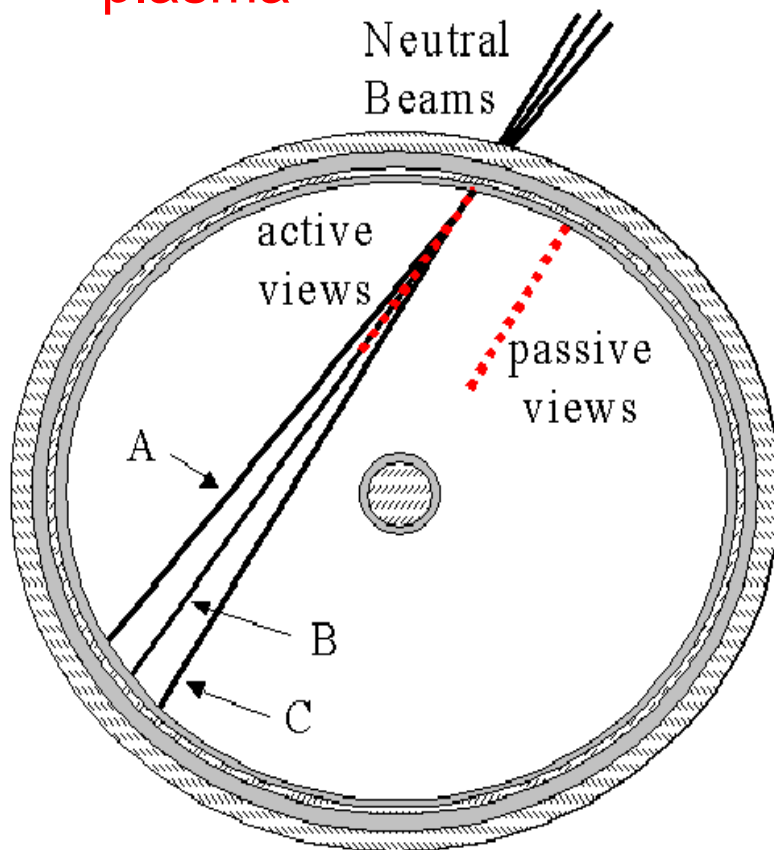
Two systems operational during 2008 run:

- **Spectrometer (*s-FIDA*)**
 - 16 radial positions:
R = 85cm -> 155cm
 - Energy resolution ~10keV
 - Temporal resolution 10ms
- **Filter-based (*f-FIDA*)**
 - 3 radial positions:
100, 120 and 140cm
 - Energy-integrated
 - Temporal resolution >20 μ s



Each channel composed by *active* and *passive* views (background evaluation)

- Active views @ bay A
- Passive views @ bay B
- Looking vertically through the plasma



Share optics with
CHERS, ERD
diagnostics

Planned upgrades/ongoing work for 2009:

- **s-FIDA:**

- Complete analysis software: ? Between-shots analysis ?
- Improve “remote control” of hardware setup (e.g. position of opaque strips filtering out cold D-alpha)
- Use narrower entrance slits ?
 - Narrower instrument function, better resolution of impurity peaks, ...
- Extend analysis to red-shifted emission
 - Information on pitch angle from asymmetries in the spectrum ?

- **f-FIDA:**

- Improve optics
- Integrate analysis with s-FIDA

Present systems mostly sensitive to fast ions with low pitch-angle (high perp. velocity)

Example from FIDA XMP:

Measured photons with $E_\lambda = 40\text{keV}$ result from fast ions with **$E \geq 40\text{keV}$, pitch ≤ 0.5**

