3. The HSX TS system

3.1 Beam Transportation and Stray Light Control

The HSX TS system utilizes a vacuum compatible system design of the CONFORT-II polychromators. A beam line is constructed into the HSX vacuum chamber. The system consists of the following components:

- Beam line system
- A mirror located near the light source
- Collection optics at the scattered light
- Baffle system and stray light screening

3.2 Laser system

A commercial Nd:YAG laser is used as the scattering source. The pulse is about 10 ns bandwidth and has a wavelength of 1.06μm.

3.3 Collection optics

Collection optics are responsible for the scattered polychromator entrance. The polychromator is a 420-950 nm UV/IR camera system.

3.4 Signal Handling Data System and Control system

A fast digital signal is fed to the channel controller. The signal is processed through a preamplifier, a variable attenuator, and a gateable preamplifier. The temporal response is 100 μs full width at half maximum.

3.5 Ten Channel Profile Measurement

Ten individual fibers in each bundle are a selected with an attenuator in an absolute calibration. Each fiber is measured with the polychromator through the bundle.

3.6 Spectrum Dispersion and Detection System

Electron temperature is measured with the ratio between each wavelength channel. There is an integration of 20 μs/cm.

4. Experiment Results

The first channel got saturated. (stray light?)

4.1 Density and Power Scan

Ten fiber bundles corresponding to ten radial channels.

4.2 Five channel measurement for QHS Density Scan

There are 128 individual fibers in each bundle located in a selected area.

4.3 Ten Channel Profile Measurement

The first three channels got saturated. (stray light?)