7. PARTICIPATION ON THE TCV PROJECT

This project has two research lines, where the following activities will be carried out:

- *X-ray diagnostics*

- Installation of a new acquisition system on the horizontal pulse height analysis (PHA) diagnostic aiming at increasing its throughput;
- Scientific exploitation of the horizontal PHA diagnostic;
- Improvement of the real-time capabilities of the vertical PHA diagnostic by measuring the electron temperature and remotely controlling the aperture as a function of the count rate leading to a stable throughput of the system;
- Study of the evolution of the soft X-ray spectra for plasmas whose characteristics vary deeply from discharge to discharge;
- Optimization of the operation of the rotating crystal spectrometer;
- Beginning of high resolution studies of the X-rays spectra on impurities transport.

- *Advanced plasma control system (APCS)*

- Testing of the new version of the CPLD to control the DMBUS and of the data mover algorithms with this new component;
- Implementation and testing of some of the control algorithms requested by the TCV control team;
- Integration of the VME system crate and its nine DSPs boards as well as the host CPU of the APCS in the TCV control System;
- Integration of the APCS in the TCV timing system;
- Integration and testing of the software already developed in the host CPU which configures the DSPS modules;
- Calibration of the overall analog signals of the system;
- Testing of the system in the TCV plasma control substituting the old analogue system.