

A Vertical ECE Diagnostic for TCV

L. Porte, S. Coda, S. Alberti, R. Bertizzolo, R. Chavan, J-M. Mayor, A. Simonetto¹,
V.S. Udintsev

Ecole Polytechnique Fédérale de Lausanne (EPFL), Centre de Recherches en
Physique de Plasmas, Association EURATOM Confédération Suisse, 1015
Lausanne, Switzerland

¹Instituto di Physica del Plasma, Associazione EURATOM-ENEA-CAN, Via Cozzi 53,
20125 Milano, Italy

With ECRH power density unrivalled in the fusion community, TCV is in a position to study fast-electron dynamics in regimes where quasi-linear effects dominate. TCV is equipped with a comprehensive suite of ECE heterodyne radiometers that covers the first three ECE harmonics. A new vertical line will be installed in the coming months which will allow ECE measurements to be made whose interpretation is straightforward and yields direct information on the fast electron energy distribution and density. The line will be equipped with a glass ceramic (MACOR) beam dump mounted in the vacuum vessel that has a rejection in excess of 100dB. The focussing optics will be placed in air behind a quartz window and an oversized, corrugated transmission line will transport the radiation from the tokamak to the existing radiometers. The diagnostic layout will be described and the physics potential examined.