Neoclassical transport theory underestimates heat and particle transport in tokamak plasma. It is believed that turbulence is responsible for this. Turbulence can also create global modes which, in turn, regulate its development. It is essential to characterise turbulent phenomena and its creation and suppression mechanisms.

By virtue of its high spatial and temporal resolution Correlation Electron Cyclotron Emission (CECE) can be used to investigate the electron temperature component of turbulence. TCV has a six channel CECE radiometer with a line of sight perpendicular to the magnetic field. The antenna pattern of the radiometer limits resolution to $k_0 < 112 \text{ m}^{-1}$ and can access minor radius $\rho_{\text{vol}} < 0.7$. It has been used in several studies taking advantage of TCV flexibility in plasma shape and position.

In TCV, broadband turbulence is usually driven by either TEM or ITG modes. Its dependence on plasma shape has been studied. Broadband turbulence has been measured in different plasmas. In particular, a comparison of the amplitude ($\tilde{T}_e/T_e$) of turbulence between positive and negative triangularity has been carried out. An evolution of the electron temperature turbulence spectra is observed as the triangularity passes from negative to positive and an increase in $\tilde{T}_e/T_e$ is observed at the same time. The increase in $\tilde{T}_e/T_e$ does not penetrate beyond $\rho_{\text{vol}} \approx 0.7$.

Geodesic acoustic modes (GAMs) have been observed on TCV using CECE. They are localised at the plasma edge ($\rho_{\text{vol}} > 0.7$) and appear typically as a spectral feature of frequency $\approx 30 \text{ kHz}$ and are poloidally extended.

Local GENE runs have been performed and a synthetic diagnostic back-end has been implemented. The numerical results, adapted by use of the synthetic diagnostic, will be compared with the experimental results.