We have performed an investigation of the internal rotation of the methyl group in trans-cis ethyl vinyl ether by using molecular beam-Fourier transform Microwave (MB-FTMW) spectroscopy. Rotational spectra (up to $J = 20$) were recorded in the frequency region $4 - 19$ GHz. Due to the internal rotation of the methyl group, some rotational transitions were split and the torsional barrier could be determined to $V_3(\text{CH}_3) = 1074.4(4)$ cm$^{-1}$.

Key words: Molecular Beam; Microwave Spectroscopy; Internal Rotation.