

Design and Test of a New Microwave Beam Position Monitor for the Undulator of the TTF-FEL, T. KAMPS, R. LORENZ, DESY Zeuthen, Germany - Beam-based alignment is essential for the operation of the SASE-FEL at the TESLA Test Facility Linac. In order to ensure the overlap of the photon beam and the electron beam, the position of the electron beam has to be measured at several points along the undulator beamline. Due to the severe limitations in vertical space, a new microwave concept is being considered. The monitor system is based on special ridged waveguides coupling by small slots to the magnetic field of the electron beam. The four waveguides and slots of each monitor were split into two symmetric pairs separated in beam direction. The averaged position of a bunch train will be measured in a narrowband X-band receiver. A prototype of this monitor was built and tested on a testbench. In addition, it was tested at the CLIC Test Facility at CERN with single bunches. The paper summarizes the concept, the design and test results of the prototype.