

**Beam Based Alignment at BESSY, P. KUSKE,
K. OTT, BESSY** - The variation of the focusing strength of a quadrupole lens leads to closed orbit distortions all around the ring if there is an offset between the position of the beam and the centre of that magnet. This orbit change is observed with all beam position monitors (BPMs) and can be fitted by a kick perturbation at that location. A correction has been derived so that the original position of the beam inside the magnet can be determined with an accuracy of better than 20 microns from the fitted kick angle even for large variations of the quadrupole strength. The high accuracy is achieved without steering the beam to the centre of the magnet. This technique profits by the large closed orbit amplification factors for quadrupole misalignments of low emittance rings like BESSY I and II and by the micron resolution for relative measurements achieved with state-of-the-art BPMs based on pickup electrodes.