Cavity BPMs for the NLC

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Abstract

The requirements on the Beam-Position Monitor (BPM) system for the proposed Next Linear Collider are very stringent, especially the requirements for position stability. In order to meet these requirements it was decided that cavity BPMs were the best choice. A pair of cavities resonant at 11.424 GHz were designed in a monolithic block. The dipole mode xy-cavity uses a novel coupling scheme that (in principal) has zero coupling to the monopole mode. The other cavity is resonant for the monopole mode and is used to determine the phase. Comprehensive simulations were performed before completion of the mechanical design and production of the first prototype. These results and subsequent tests of the prototype will be presented.