

Abstract

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One of the necessary components in probe array memory storage devices is an actuator that aligns and moves the probes with respect to the medium in order to be able to read and write data. In the μ SPAM project, the desired working speed should be above 10 mm/s in order to achieve access times below 10 ms and the precision, or tracking error, should not exceed 10 nm in order to enable densities up to 1 Tbit/in². The tracking function is being performed by an inchworm device (Figure 1), from hereon called the μ Walker [1]. It has proven to be able to deliver relatively high forces for a range that can in principle be unlimited. In order to better understand the behaviour of the μ Walker, to optimize its performance and as a basis for the design of a feed-back controller a model of this device is needed. This abstract presents a model based on a power-conservative port-based approach. The model has been implemented in the 20-Sim [2] simulation package.