ON THE SERVO SYSTEM OF MICRO-METER PRECISION ACTUATOR ON DVD

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ABSTRACT

THE ACTUATOR ON OPTICAL PICKUP HEAD THAT IS A PRECISION DEVICE IN THE DVD ROM OR DVD PLAYER, IS CONTROLLED MUST BEMM PRECISION POSITION GRADE FOR FOCUSING AND TRACKING. THE CONTROLLED PRECISION PART OF THE FOCUSING AND TRACKING ACTUATOR IS AND RESPECTIVELY. THE AIM OF THIS PAPER IS TO MODELING FOUR WIRE TYPE ACTUATORS AND DESIGN THAT THE FOCUSING AND TRACKING ACTUATOR SISO SERVO SYSTEM RESPECTIVELY. THE DESIGN METHOD IS USING LEAD-LAG CONTROLLER BY BODE PLOT TECHNIQUE. THEN, TO ANALYZE THE FREQUENCY PERFORMANCES OF THE DESIGNED SERVO SYSTEMS AND THE SENSITIVITY OF THE ONES, WHEN THE ACTUATOR MODEL CHANGE IN SERVO SYSTEM. THE RESULTS OF THE DESIGN FOCUSING AND TRACKING SERVO SYSTEM THE BANDWIDTH IS 4 KHZ AND THE PHASE MARGIN IS 50 DEGREE. AT LAST, THE SENSITIVITY-ANALYZED RESULTS OF THE SERVO SYSTEM IN THE CONTROLLER DESIGN ARE NOT GOOD. WE HOPE THE RESULTS OF THIS RESEARCH WILL BE REFERRED IN INDUSTRY IN THE FUTURE.

Keywords : DVD ROM, DVD PLAYER, PRECISION, FOCUSING, TRACKING, FOUR WIRE TYPE ACTUATOR, SISO, LEAD AND LAG CONTROLLER, BODE PLOT TECHNIQUES, SENSITIVITY.

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