

基于显微视觉的宏/微双重驱动微动台的自动标定

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摘要

提出了基于压电技术的微操作系统的自动标定方法, 采用混合式步进电机直接驱动的宏动平台, 实现系统大行程宏动定位, 安装在宏动平台上的压电陶瓷驱动的微动平台和精密光栅, 实现亚微米级的分辨率和定位精度, 通过以上两部分实现定位机构的全闭环反馈控制, 采用显微视觉反馈获取微动台操作器在图像中的位置信息进行标定。实验结果表明: 系统的动态和稳定性良好, 自动标定

关键词 [仪器仪表技术](#); [宏微双重驱动](#); [压电技术](#); [精密定位](#); [显微视觉](#); [自动标定](#)

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Automatic calibration of macro micro dual drive micromotion stage based on micro-vision

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Abstract

An automatic calibration technique based on the piezoelectric technology(PZT) micro operation system was presented. Long travel macro motion positioning is realized by a hybrid step motor. Submicron resolution and positioning precision are realized by a micro stage driven by PZT which is mounted on a macro stage as well as a high resolution optical linear encoder. A closed loop control was achieved by both of the above mentioned positioning systems. Micro vision feedback was integrated into the closed loop system to get the position information of the micro stage of the operator in the image to do the calibration. The experimental results showed that the dynamic performance and working stability of the system were satisfactory. The system is characterized by high calibration speed and precision with the image processing rate of 11 frames per second and the positioning precision of 0.1 μm.

Key words [techonology of instrument and meter](#) [macro micro dual drive](#) [piezoelectric technology\(PZT\)](#) [precision positioning](#) [micro-vision](#) [auto calibration](#)

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