

36—45 Development of Non-Resonant Ultrasonic Motor with Sub-Nanometer Resolution

大学院自然科学研究科	教 授	久保田 弘
電気システム工学科	助 教 授	中 田 明 良
大学院自然科学研究科	前期課程	Taishi Endo
	後期課程	Hiroyuki Hashiguchi
		Yoshiya Egashira
		Kouji Kosaka
		Keiichi Nagamoto

Ultrasonic motor for the precision stage with higher velocity than 140 mm/s, larger stroke than 100 mm, and ± 0.69 nm positioning accuracy has been developed. These conflicting performances, the high-speed, long-stroke, and high-resolution, has been finally achieved by using the non-resonant ultrasonic motor (NRUSM) controlled under the only DC characteristic of the piezoelectric effects. The NRUSM is expected to solve difficult tasks of nanometer-range manipulations such as precision treatment at semiconductor LSI circuits, bio-cells, molecular sensors, and quantum devices.

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