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Search for Orbital-Current Effects in $Y_2Ba_4Cu_7O_{15-\delta}$ using ^{89}Y NMR SIMON STRÄSSLE, JOSEF ROOS, MIHAEL MALI, HUGO KELLER, Physik-Institut, Universität Zürich, CH-8057 Zürich, Switzerland, TAKASHI OHNO, Department of Physics, Faculty of Engineering, Tokushima University, Tokushima 770-8506, Japan — Recent efforts at explaining the exotic electronic properties of cuprates by involving orbital currents attracted a lot of attention. Here we present ^{89}Y NMR measurements on an oriented $Y_2Ba_4Cu_7O_{15-\delta}$ powder sample to search for the possible orbital-current phase. The temperature behavior of the ^{89}Y line width and the spin-lattice relaxation rate in the normal-conducting phase were investigated in the normal-conducting state of the compound. The study provides upper limits for a static magnetic field and the amplitude of a fluctuating magnetic field at the Y site of $\lesssim 0.15mT$ and $\lesssim 0.7mT$, respectively. These values provide significant constraints on possible static or quasi-static orbital currents.

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