

Supporting Information

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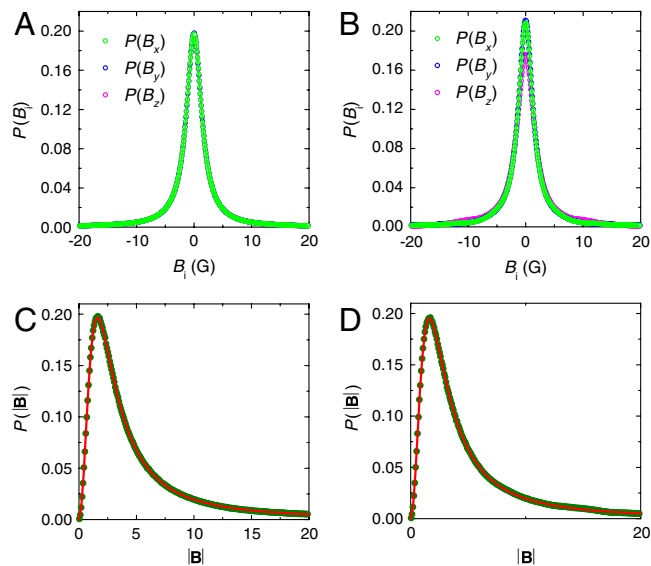


Fig. S1. Simulations of the distribution of the spatial components and magnitude of the local magnetic field at the muon site for frozen magnetic moments in $\text{La}_{1.67}\text{Sr}_{0.33}\text{CuO}_4$ (LSCO33). The field distributions are for $2.86 \mu_B$ magnetic moments randomly distributed with 0.00312 moments per tetragonal unit cell of LSCO33. The muon site in the LSCO33 tetragonal unit cell is $(0.253a, 0.0b, 0.162c)$, where $a = b = 3.78 \text{ \AA}$ and $c = 13.2 \text{ \AA}$ are the lattice constants. *A* shows the distribution of field components for randomly oriented moments. *B* shows the distribution of field components for an equal number of moments aligned parallel and antiparallel to the c axis. The curves in each figure show fits to a Lorentzian distribution of field components. (*C*) The distribution of the field magnitude for the case of randomly oriented moments. The red curve is a fit assuming an isotropic Lorentzian distribution of field components with a half-width at half-maximum (HWHM) of 1.62 G . (*D*) The distribution of the field magnitude for the case of the moments parallel and antiparallel to the c axis. The red curve is a fit assuming an isotropic Lorentzian distribution of field components with a HWHM of 1.63 G . Note that aligning all of the moments parallel to the c axis increases the HWHM of the Lorentzian distribution slightly to 1.66 G .