Abstract Submitted
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Adsorbed Oxygen Molecules as a Possible Source of Flux Noise in SQUIDs[1] CHUNTAI SHI, Univ of California - Irvine, HUI WANG[2], Fudan University, China, JUN HU, CLARE YU, RUQIAN WU[3], Univ of California - Irvine — One of the dominant source of flux noise in SQUIDs is flux noise which has been attributed to mysterious fluctuating magnetic spins on the surface. We propose that the spins producing flux noise could be adsorbed O_2 molecules that have a magnetic moment of about 2 μ_B. Using density functional calculations, we studied O_2 molecules adsorbed on a sapphire surface. We find that the barrier for spin rotation is small enough to allow almost free spin reorientation due to thermal excitations at low temperatures. Monte Carlo simulations of a 2D XY spin model yields $1/f$ noise where f is frequency.

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