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CermitESR(B0, B1, cantilever, f rf, grid, h, magnet, mw x 0p, sample)
returns: df spin
graph: cornell_esr_graph
handler: MemHandler
modifiers:
 - replace_component({'magnet': ['Bz_method', 'Bzxx_method'], 'sample': ['J',
 'Gamma', 'spin density', 'temperature', 'dB sat', 'dB hom'], 'grid':
 ['grid_array', 'grid_shape', 'grid_step', 'grid_voxel', 'extend_grid_method'],
 'cantilever': ['dk to df ac cermit']})
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Simulates a Cornell-style frequency shift magnetic resonance force microscope experiment in which microwaves are applied for half a cantilever cyclic to saturate electron spin resonance in a bowl-shaped region swept out by the

cantilever motion. convert microwave x 0p convert grid pts(mw x 0p, grid step) return: ext pts functype: callable Convert distance to ext points. ext_pts extended ogrid <lambda>(extend grid method, ext pts) return: ext ogrid functype: lambda Lambda expression: extend grid method(ext pts) ext_ogrid extended sample ogrid ogrid sub(ext ogrid, h) return: ext sample ogrid functype: callable Subtraction method used for ogrid. ext_sample_ogrid extended Bz <lambda>(Bz method, ext sample ogrid) return: ext Bz functype: lambda Lambda expression: Bz method(*ext sample ogrid) ext_Bz extended B total ext_pts add(ext Bz, B0) return: ext_B_tot ext B tot functype: builtin Same as a + b. ext B tot extended B offset B total slice_matrix(ext_B_tot, grid_shape) B_offset(ext_B_tot, f_rf, Gamma) return: ext_B_offset return: B tot functype: callable functype: callable Calculate the resonance offset. Slice numpy matrix. ext_B_offset minimum absolute x offset sample ogrid min abs offset(ext B offset, ext pts) ogrid_sub(grid_array, h) B tot return: B offset return: sample_ogrid functype: callable functype: callable Minimum absolute value of a matrix in x direction Subtraction method used for ogrid. based on the window. sample ogrid B_offset equilibrium magnetization per spin relative polarization change Bzxx mz_eq(B_tot, Gamma, J, temperature) rel_dpol_sat_steadystate(B_offset, B1, dB_sat, <lambda>(Bzxx_method, sample_ogrid) return: mz_eq dB hom) return: Bzxx return: rel dpol functype: callable functype: lambda functype: callable Magnetization per spin at the thermal equilibrium using the Brillouin function. Lambda expression: Bzxx_method(*sample_ogrid)Bz Relative change in polarization for steady-state. rel_dpol_ spring constant shift <lambda>(Bzxx, rel_dpol, mz_eq, spin_density, grid voxel) return: dk_spin functype: lambda Lambda expression: - (Bzxx * rel dpol * mz eq * spin_density * grid_voxel).sum() dk_spin frequency shift <a href="mailto: (dk to df ac cermit, dk spin) return: df spin functype: lambda Lambda expression: dk to df ac cermit(dk spin)