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Time dependent Diffuse Scattering experiments on Spin Ice SEAN GIBLIN, MATT HUNT, Cardiff University, UK, TOM FENNELL, MARTIN RUMINY, MAREK BARTKOWIAK, LUKAS KELLER, MATTHIAS FRONTZEK, EKATERINA POMJAKUSHINA, JONATHAN WHITE, PSI, Switzerland, PASCAL MANUEL, PAUL MCCLARTY, ISIS neutron source, UK, PATRIK HENELIUS, MIKEAL TWENGSTROM, KTH, Sweden, STEVE BRAMWELL, UCL, UK — A recent investigation into the spin ice material Dy2Ti2O7 has shown evidence of a very slow equilibration time constant. Such slow equilibration could be a consequence of either modifications of the spin ice ground state or a result of structural defects in the sample. Neutron scattering provides perhaps the most accurate way of measuring spin correlations and can subsequently be used to constrain the Hamiltonian of the spin ice system. Here we present detailed neutron scattering measurements, in combination with in-situ ac susceptibility measurements to measure the spin correlations as a function of time at 350mK for 10ˆ6 s. By measuring the spin temperature using susceptibility we can accurately comment on the thermal stability of the sample as a function of time and also characterize the inherent beam heating of the sample. We have investigated the diffuse scattering with an oxygen annealed single crystal, isotopically enriched sample and we will present the results of the thermal annealing experiment concentrating on the diffuse scattering centered around (0,0,3) and (3/2,3/2,3/2).

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