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Equilibration and response properties in spin ice systems CLAUDIO CASTELNOVO, University of Oxford, RODERICH MOESSNER, Max Planck Institute for the Physics of Complex Systems, SHIVAJI SONDHI, Princeton University — It was recently argued that magnetic monopoles emerge in a class of exotic magnets known as spin ice: the dipole moment of the underlying electronic degrees of freedom fractionalises into deconfined monopoles. Here we investigate analytically and numerically the effects that these peculiar excitations have on the equilibration and response properties of a system. In particular, we study temperature quenches in exhaustive detail. The implications of these results on the possibility of finding new experimental signatures of magnetic monpole excitations in rare earth titanates ($Dy_2Ti_2O_7$ and $Ho_2Ti_2O_7$) are discussed.

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