Reverse Monte Carlo analysis of field-dependent magnetic diffuse scattering on single crystal XY AFM pyrochlore NaCaCo$_2$F$_7$

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XY-like AFM moments on pyrochlore lattice + absent (002) peak (=> $\Gamma_5$ manifold) + site disorder, yet no order by disorder?

NaCaCo$_2$F$_7$: $\Psi_2$ or $\Psi_3$?
Field dependence inconclusive (no LRO). We need to characterize the short range order (SRO).

NaCaCo$_2$F$_7$ freezes into quasi-LRO states. With refinement of 3D diffuse scattering using single crystal RMC (with static classical spins), we can access $<S_0.S_r>$ at multiple length scales, and perhaps tell at what scale spins are like $\Psi_2$, $\Psi_3$, or collinear AFM states, and elucidate their evolution under field.