Monte-Carlo vs Spectral response on S³ (Hopf fibration S¹→S³→S²)

Top panel:
Y-axis: Fiber/Base ratio R(α) = E_fiber / E_base
X-axis: Relaxation bias α

Legend:
- Reference at α=0 (R≈0.876)
- Monte-Carlo (on kNN edges) — Hopf fiber/base
- Spectral (kernel on kNN edges) — Hopf fiber/base [k=12, sigma=0.7]

Bottom panel:
Y-axis: Normalized energies
X-axis: Relaxation bias α

Legend:
- MC E_fiber / E_fiber(0)
- MC E_base / E_base(0)
- Spec E_fiber / E_fiber(0)
- Spec E_base / E_base(0)