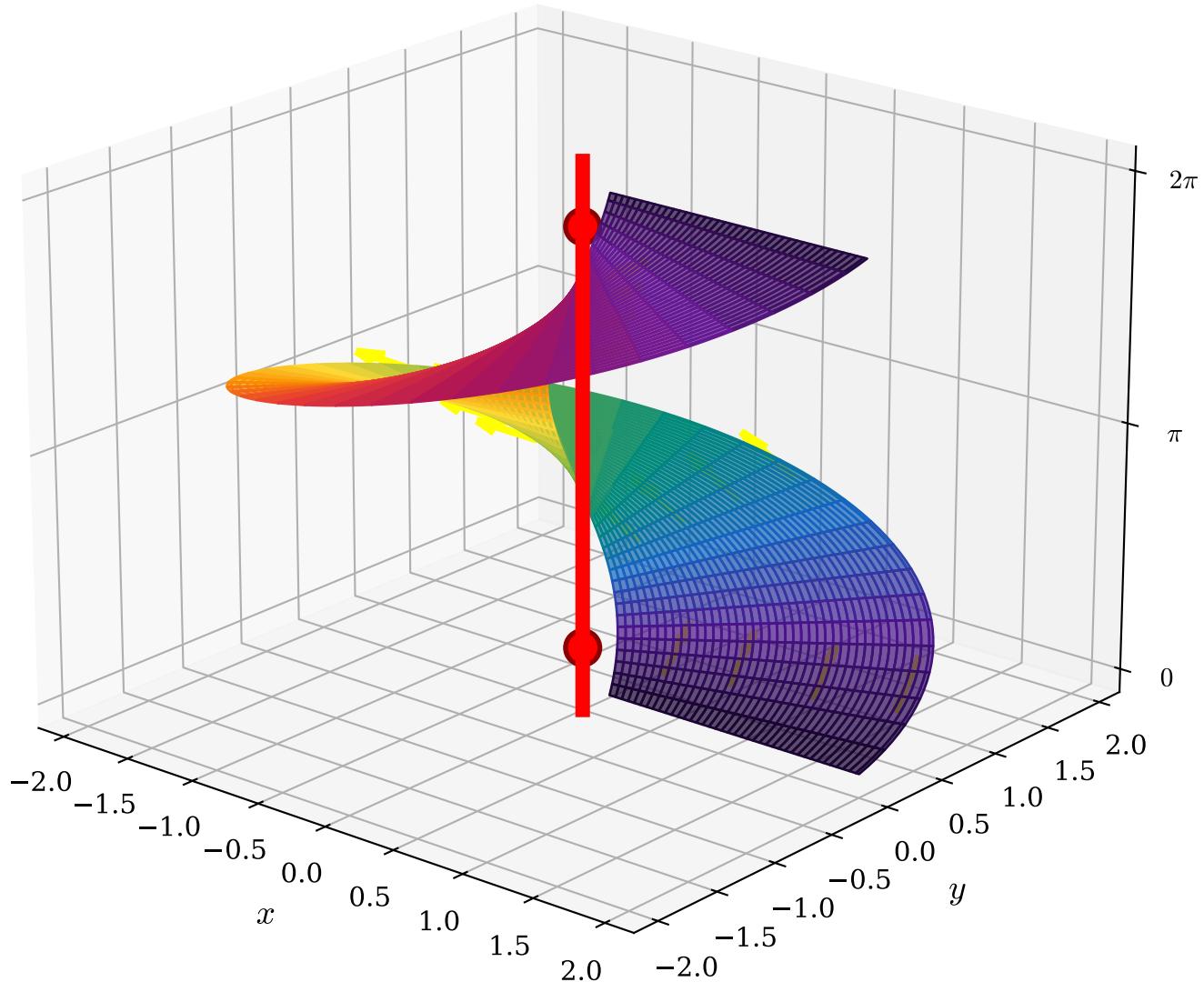


Chiral Condensate $\chi = v_\chi e^{i\theta}$: Phase Winding, Current, and Particle

Spiral surface: Phase field $\theta(x,y)$

Yellow arrows: Current $J_5 \propto \nabla\theta$

Red core: Particle (topological defect)



The phase cannot be smoothly defined at $r=0 \rightarrow$ topological defect \rightarrow particle