1154-57-2757 **Eric Samperton*** (smprtn@illinois.edu). *Coloring invariants of knots and links are often intractable.*

Invariants are useful for studying knots, but there is a trade-off: one should expect a stronger invariant to be harder to compute. Coloring invariants are a particular class of invariants of knots coming from finite groups. Given a finite group G, we can count the number of homomorphisms ("G-colors") $\pi_1(S^3 \setminus K) \to G$. Of course, the complexity of the G-coloring invariant depends on G. If G is abelian, the invariant is trivial. On the other end, if G is nonabelian simple, then I will show that computing is hard, in a precise complexity-theoretic sense. Time-permitting, I'll discuss applications to symmetry-enriched topological phases. This is joint work with Greg Kuperberg. (Received September 17, 2019)