1142-53-58 **Andrew Cooper***, Box 8205, North Carolina State University, Raleigh, NC 27695. *A Maximum Principle for Circle-Valued Temperatures.*

It is a classical fact that a function $u : M \times [0, T) \to \mathbb{R}$ from a closed Riemannian manifold which satisfies the heat equation $\frac{\partial u}{\partial t} = \Delta u$ must satisfy a maximum principle: its oscillation is nonincreasing in time. This is true even if the Riemannian metric (hence the Laplacian operator Δ) is evolving in time, and even if the metric becomes singular as $t \to T$.

In this talk, I'll describe the corresponding statement when $u : M \times [0, T) \to S^1$ is circle-valued rather than real-valued; the proof is an application of elementary tools from algebraic topology. I'll also give a couple of examples of where such a *circle-valued temperature* arises and explain how the maximum principle is useful there. (Received August 25, 2018)