Singularity theorems for $C^1$-Lorentzian metrics

The classical singularity theorems of General Relativity show that a Lorentzian manifold with a smooth metric satisfying certain physically reasonable curvature and causality conditions cannot be causal geodesically complete. In my talk I will discuss current work concerning stability of causal geodesic completeness for metrics that are merely continuously differentiable - a regularity where one still has existence but not uniqueness for solutions of the geodesic equation. Together with careful estimates of the curvature of approximating smooth metrics this can be used to prove certain singularity theorems, such as Hawking’s theorem, for metrics of this regularity.