1096-57-2788 **Jason Thomson La Corte*** (jlacorte@uwm.edu). *Curvature-constrained path planning in nonpositively curved cube complexes.*

State complexes are nonpositively curved cube complexes that model the state spaces of certain dynamical systems, called reconfigurable systems, whose allowable transformations are given by a set of reversible local rules. Reconfigurable systems arise naturally in problems involving geometric group theory, metamorphic robotic systems, and traditional robotics. The problem of determining an optimal strategy for reconfiguring the system from a given initial state to a given goal state is equivalent to that of finding an optimal path between two points in the state complex. If we additionally require that allowable paths must have average curvature bounded above by a constant, and that they must have a prescribed initial direction, this problem becomes what is known as a Dubins problem with free terminal direction. We present some theoretical and computational results related to the Dubins problem with free terminal direction for certain classes of nonpositively curved cube complexes, including some square complexes which have for their 1-skeleta the Cayley graphs of Coxeter groups. (Received October 22, 2013)