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Valerie J. Peterson* (vpeterso@uiuc.edu), Department of Mathematics, 1409 West Green Street, Urbana, IL 61801. *State Complexes and Special Cube Complexes*.

We present a topological, geometric, and group theoretic investigation into two related classes of CW-complexes. A **state complex** is a cubical complex that records the legal configurations of some moving system, as well as information about when system agents can move simultaneously. This is useful in robotic motion planning and other settings, both applied and abstract. A **special cube complex** is one whose hyperplanes avoid certain pathological interactions; these complexes are closely related to right-angled Artin groups, as are state complexes. (Received August 19, 2008)