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Brendan Burns Healy* (healyb@uwm.edu) and **G Chris Hruska**. *Model Spaces for Relatively Hyperbolic Pairs*.

Relatively hyperbolic pairs are groups with preferred peripheral subgroups and are meant to generalize the behavior of non-uniform lattices in rank one symmetric spaces of noncompact type. While in geometric actions the preferred hyperbolic space is well-defined up to quasi-isometry, cusp-uniform actions by relatively hyperbolic pairs require two choices to be made in order to determine a QI-class of hyperbolic space. We examine the symmetric space case for the motivation behind the choice of a preferred type of space and prove these model spaces exist and are uniquely determined. In doing this we examine different kinds of horospherical geometry, prove internal geometry conditions sufficient for uniform perfection of the boundary of a hyperbolic space when acted on cusp-uniformly, note the connection between space quasi-isometries and boundary quasi-symmetries, and demonstrate existence of some classes of cusp-uniform actions on non-model spaces. (Received January 27, 2020)