Dynamics of algebraic correspondences and mating phenomena

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In the 1990s, Bullett and Penrose introduced a family of algebraic correspondences on the Riemann sphere whose members were conjectured to com- bine the actions of the modular group with quadratic maps. Recently, Bullett and Lomonaco confirmed that matings of the modular group with all parabolic quadratic rational maps are indeed realized in this family. We will formulate a general construction of such correspondences in the anti- holomorphic setting using univalent restrictions of rational maps on round disks. We will discuss how matings of all parabolic anti-holomorphic rational maps (of arbitrary degree) with Hecke-type reflection groups can be realized in our corre- spondence framework. Time permitting, we will talk about parameter spaces of one-parameter families of correspondences arising from univalent restrictions of Shabat polynomials. Based on joint work with Mikhail Lyubich and Jacob Mazor.