The Jacobi growth processes and their local asymptotics

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Plancherel growth processes are certain continuous dynamics for interlaced point patterns that serve as prototypes for studying universality phenomena in 2 space + 1 time dimensions. Borodin–Ferrari (2008) codified the construction and analysis of such dynamics in their study of the unitary case, and Borodin–Kuan (2009) studied local asymptotics of the orthogonal case, which features a reflecting boundary. Motivated by the nature in which these methods also apply to the case of an absorbing boundary (the symplectic case), we introduce a two parameter family of growth processes, which we call the family of Jacobi growth processes, that includes the cases of reflecting and absorbing boundaries. Most importantly, the entire family retains the very special algebraic properties of the archetypal cases, allowing for an explicit determinantal description of their correlation structures. Despite losing some symmetry in the formulas, we can still obtain refined asymptotic results that reflect the distinctive wall behavior and which complement results obtained last year by Delvaux–Veto in the context of non-intersecting Bessel processes.