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Branching in Schubert calculus and quantum integrable systems. Preliminary report.

In classical Schubert calculus, Knutson and Tao's puzzles give a positive rule for expanding the product of two Schubert classes in equivariant cohomology of the (type A) Grassmannian. A more recent reinterpretation via quantum integrable systems, which also generalizes to higher-step partial flag varieties, was achieved by Wheeler—Zinn-Justin and Knutson—Zinn-Justin. I will present a positive rule, using self-dual puzzles, for the pullback of a type A Schubert class to the type C Grassmannian. We address this question via puzzles and the 5-vertex model, and generalize to cotangent bundles and the 6-vertex model. The Schubert classes are then replaced with Segre—Schwartz—MacPherson classes, in the setup of Lagrangian correspondences between symplectic resolutions. This is joint work in progress with Allen Knutson and Paul Zinn-Justin. (Received January 25, 2022)