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Braiding Forests, Products of Simplices, and Cocycles. Preliminary report.

This is based on joint work with Atsushi Ishii, Kokomo Tanaka, and Masahico Saito. We start by considering the dual structure to an $(n + 1)$ -dimensional simplex. This is called an n -dimensional foam. When an $(m + 1)$ -dimensional ball is decomposed into the product of simplices, such foams and their products are overlain in a structure that contains a unique 0-dimensional singularity. The structure is lifted into one higher dimension and an analogue of a codimension 2 knotting results. We show how to quantify crossing relations in a quandle-like structure, and describe the homology generators for this structure. (Received February 20, 2015)