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## The magic number conjecture for the $m=2$ amplituhedron and Parke-Taylor identities

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The magic number conjecture says that the cardinality of a tiling of the amplituhedron  $A_{n,k,m}$  is the number of plane partitions which fit inside a  $k$  by  $(n-k-m)$  by  $m/2$  box.

(This is a generalization of the fact that triangulations of even-dimensional cyclic polytopes have the same size.) I'll explain how we prove the magic number conjecture for the  $m=2$  amplituhedron; we also show that all positroid tilings of the hypersimplex  $\Delta_{k+1,n}$  have the same cardinality. Along the way, we give volume formulas for Parke-Taylor polytopes in terms of circular extensions of cyclic partial orders, and we prove new variants of the classical Parke-Taylor identities. This is joint work with Matteo Parisi, Melissa Sherman-Bennett, and Ran Tessler.

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