Path Decompositions of Tournaments

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In 1976, Alspach, Mason, and Pullman conjectured that any tournament T of even order can be decomposed into exactly $ex(T)$ paths, where $ex(T) := \frac{1}{2}\sum_{v\in V(T)} |d^+(v) - d^-(v)|$ (here, $d^+(v)$ and $d^-(v)$ denote the outdegree and indegree of v in T). We prove this conjecture for all sufficiently large tournaments. We also prove an asymptotically optimal result for tournaments of odd order.

This is joint work with António Girão, Daniela Kühn, Allan Lo, and Deryk Osthus.