The sandpile or critical group of a graph $G$ is an associated finite group whose order is the number of spanning trees of $G$. Holroyd et al. used a dynamical process known as rotor-routing to define a simply transitive action of the sandpile group of $G$ on its set of spanning trees.

It is well-known that if $G$ is planar, its set of spanning trees are in canonical bijection with those of its planar dual $G^*$ and furthermore that the sandpile groups of $G$ and $G^*$ are isomorphic. Thus, one can ask: are the two rotor-routing actions, of the sandpile group of $G$ on its spanning trees, and of the sandpile group of $G^*$ on its spanning trees, compatible under plane duality? We give an affirmative answer to this question, which had been conjectured by Matthew Baker. (Received September 21, 2015)