Singularities of the pentagram map

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The pentagram map, introduced by R. Schwartz, is defined by the following construction: given a polygon as input, draw all of its "shortest" diagonals, and output the smaller polygon which they cut out. There exists a set of coordinates on the space of polygons, given by cross-ratios, which transform under the pentagram map according to the Ydynamics of a cluster algebra. We study the singularities of the pentagram map. In particular, we show that a typical singularity disappears after a finite number of iterations. Additionally, we provide a method of moving past such a singularity by constructing the first subsequent iterate that is defined.