To Color the Historic Heawood Map with Four Colors Using a Systematic Rotation Method

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The four-color problem was first posed by Francis Guthrie in 1852. Over a century, many researchers tried many ways and obtained some useful results. One proposed proof was given by Alfred Kempe using Kempe Chain in 1879, but Percy Heawood found counterexample of Kempe's proof in 1890. This historic Heawood map has 25 regions. It can be very challenging to just use trial and error method to make it four-colored. In this paper, a systematic way to color the map with four colors using a novel method of rotation will be demonstrated. It shows that the novel method of rotation is very powerful and can potentially provide a systematic approach to make more challenging maps four-colored.