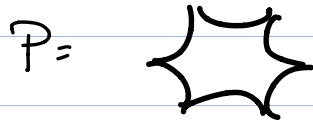
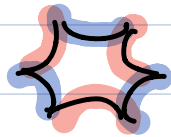


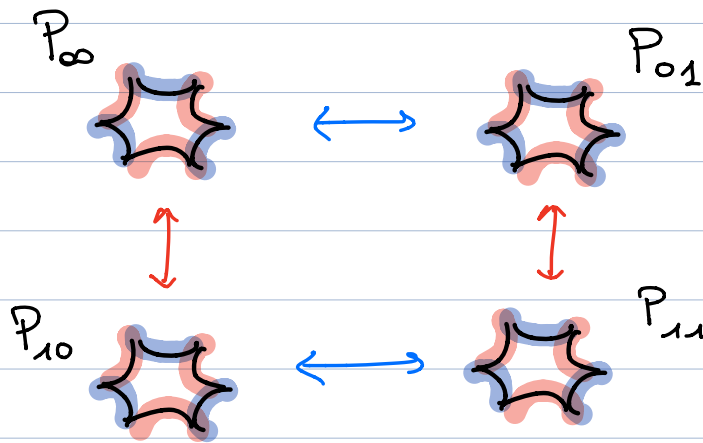
Let P be the right-angled hexagon
in \mathbb{H}^2 :



Consider the following colouring

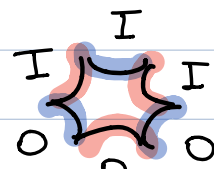


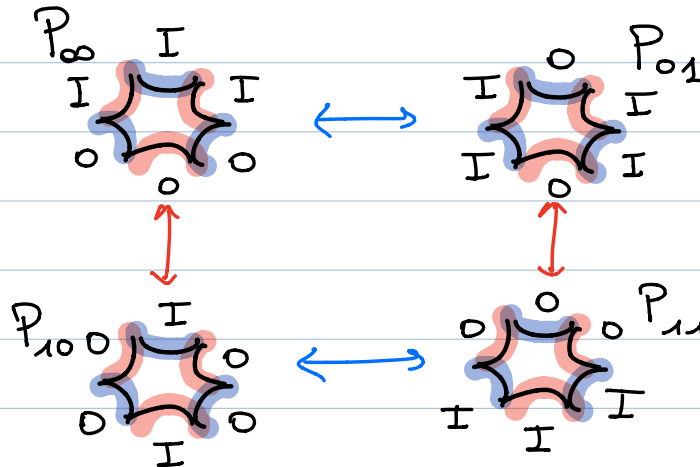
The corresponding manifold



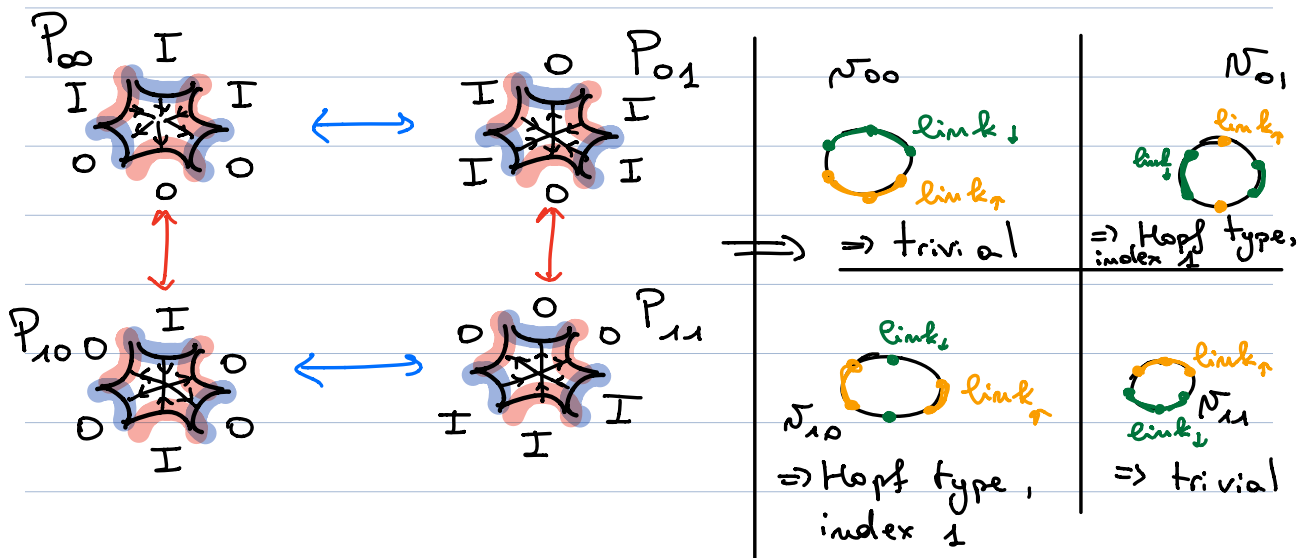
can be proven to be the surface of genus 2.

We consider 2 states on the colouring.

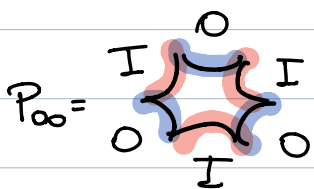
1° state) $P_{00} =$ . Moving the state we obtain the following states on P_r :

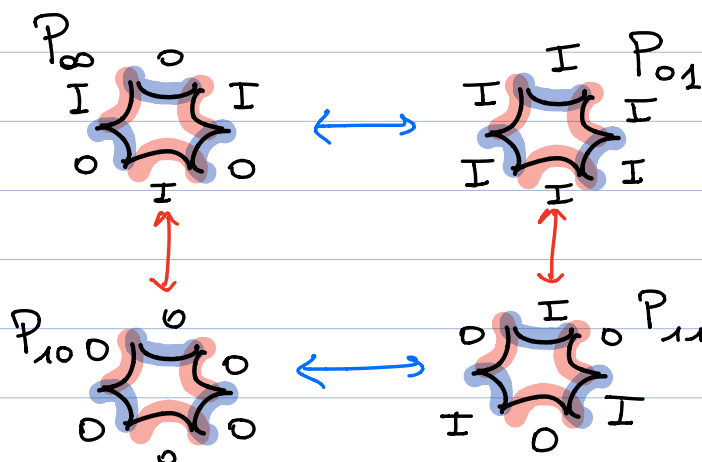


This gives us the following coherent orientation with these links, and links,

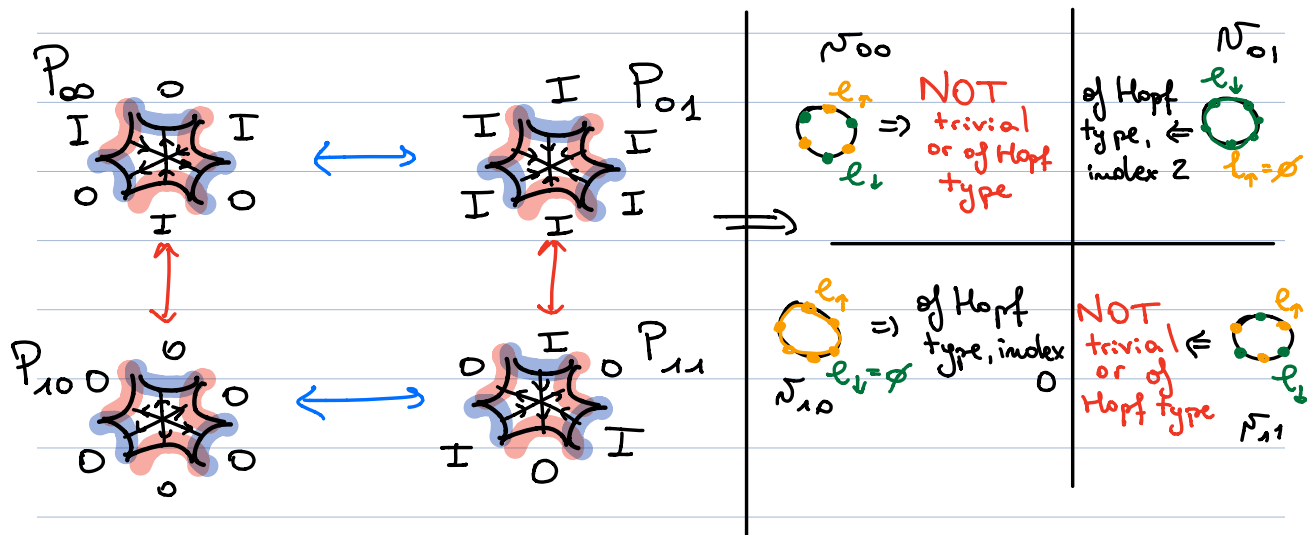


\Rightarrow We obtain a circle-valued M . function with 2 critical points of index 1 \Rightarrow it is perfect, because $2 = |\chi(\Sigma_2)|$.

2° state) $P_{00} =$

 . Moving the state we obtain the following states on P_{∞} :



This gives us the following coherent orientation with these links, and links₂



Since there are 2 vertices, namely σ_{00} and σ_{11} , that are NOT trivial or "of Hopf type", we cannot use the theorem to smoothen this map to a circle-valued Morse function.