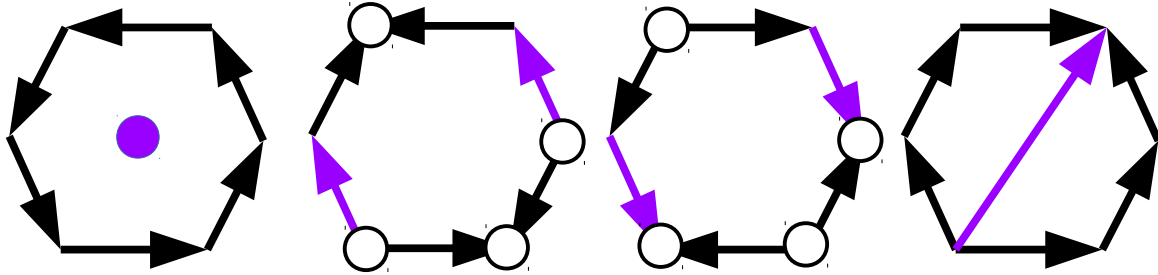


# Cocyclic Hexagons

by Sven Nilsen, 2020

*In this paper I represent cocyclic hexagons using the theory of cocyclic graphs.*

A cocyclic hexagon is one of the of the following four directed graphs:



The sum of vectors is colored in purple from left to right: Zero, sum, sum, twice the diagonal.

In the case of the two center graphs, the sum only holds if the hexagon is symmetric.

When the hexagon is asymmetric, the sum depends on the white dots.

Notice the arrows interpreted as symmetric sum can change without changing the sum.

The cocyclic hexagons are the simplest cocyclic N-gons that are not unique.

By flipping all arrows, one can get the inverse graph:

- The leftmost cocyclic hexagon is its own inverse
- The two center cocyclic hexagons are inverse to each other
- The rightmost cocyclic hexagon is its own inverse

A cocyclic hexagon is constructed from a cocyclic pentagon using any single edge.

This is left as an exercise to the reader.