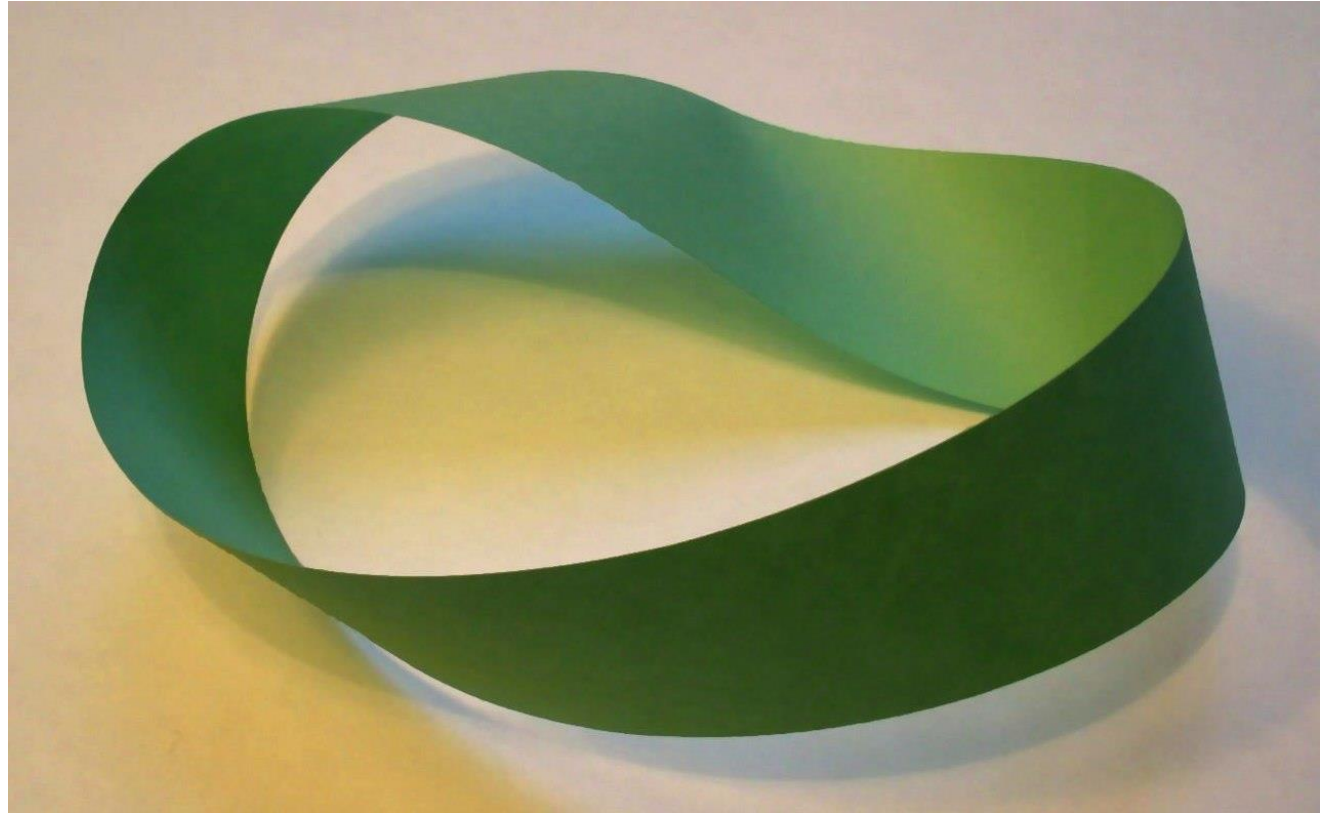
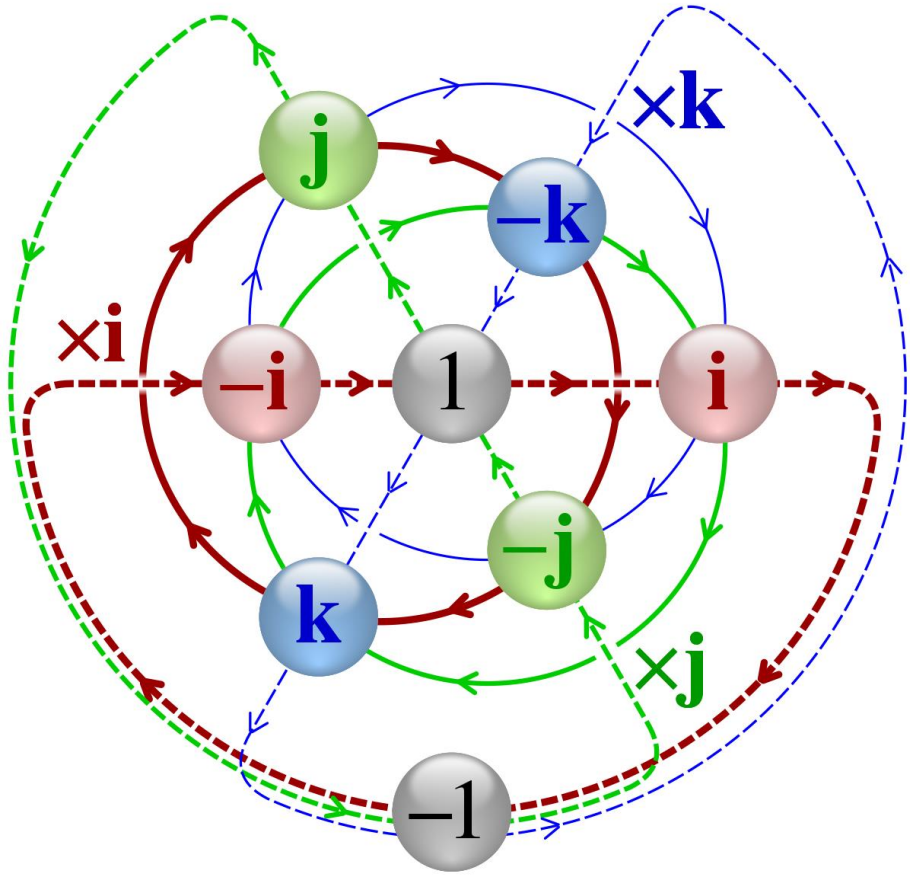
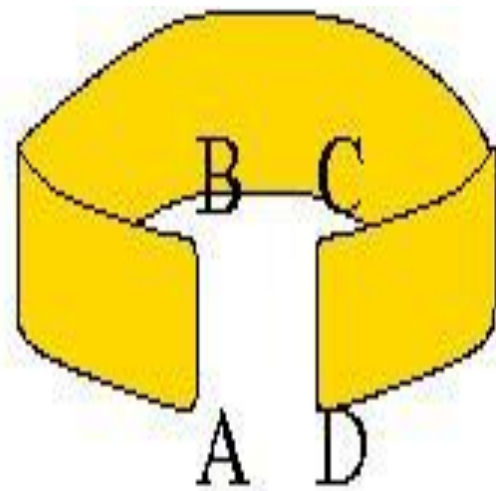
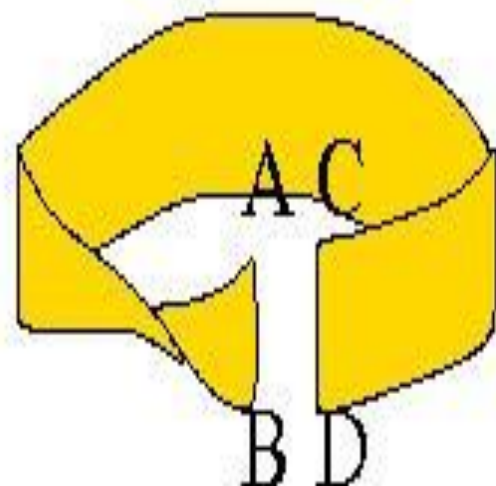


Quaternions et rubans de Möbius

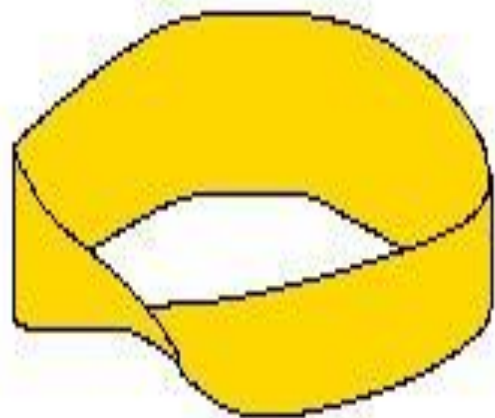


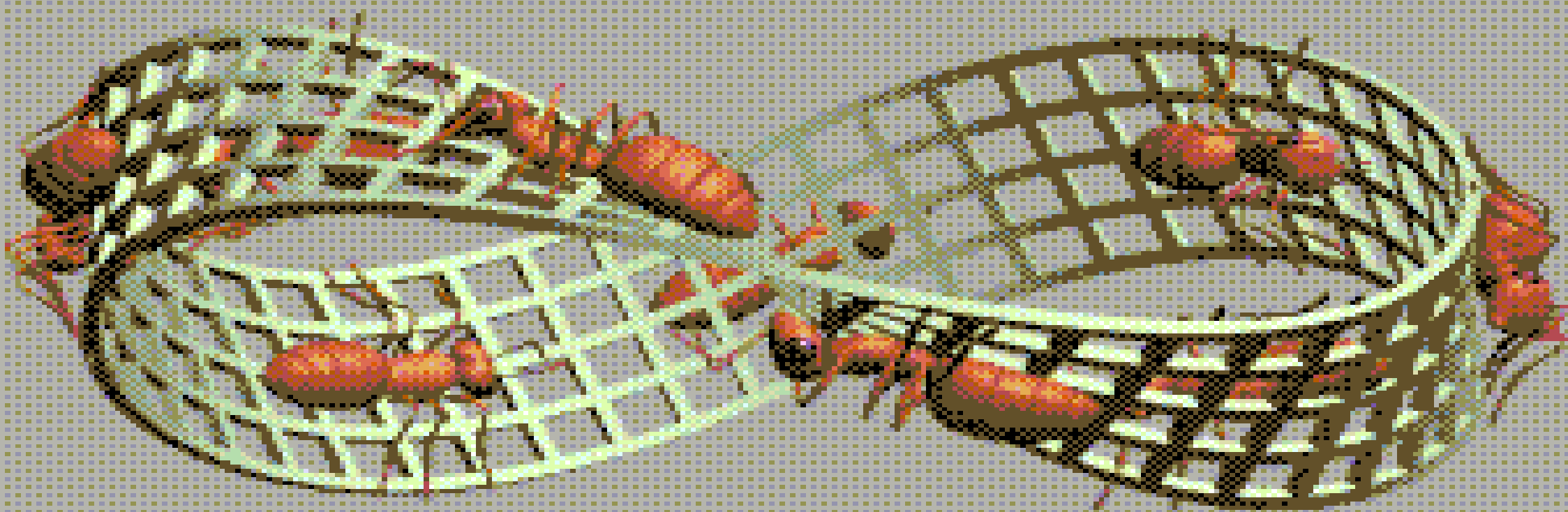


RUBAN

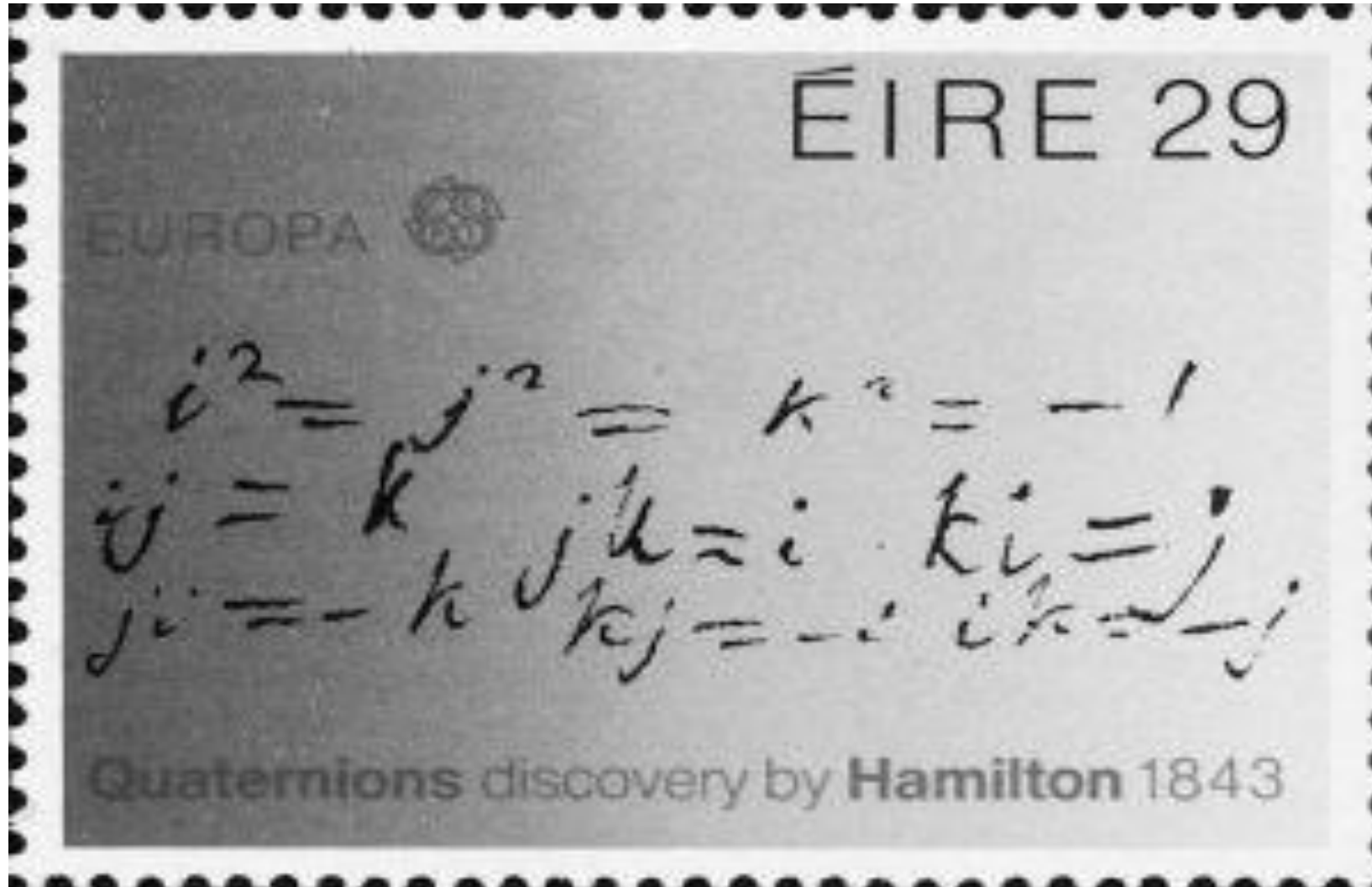


De Möbius





Quaternions



Quaternions

Un microsystème de calcul
multiplicatif à 8 éléments (Groupe)
engendré par :

$$1, i, j, k$$

Tels que :

$$i^2 = j^2 = k^2 = ijk = -1$$

Quaternions

\times	1	i	j	k
1	1	i	j	k
i	i	-1	k	$-j$
j	j	$-k$	-1	i
k	k	j	$-i$	-1

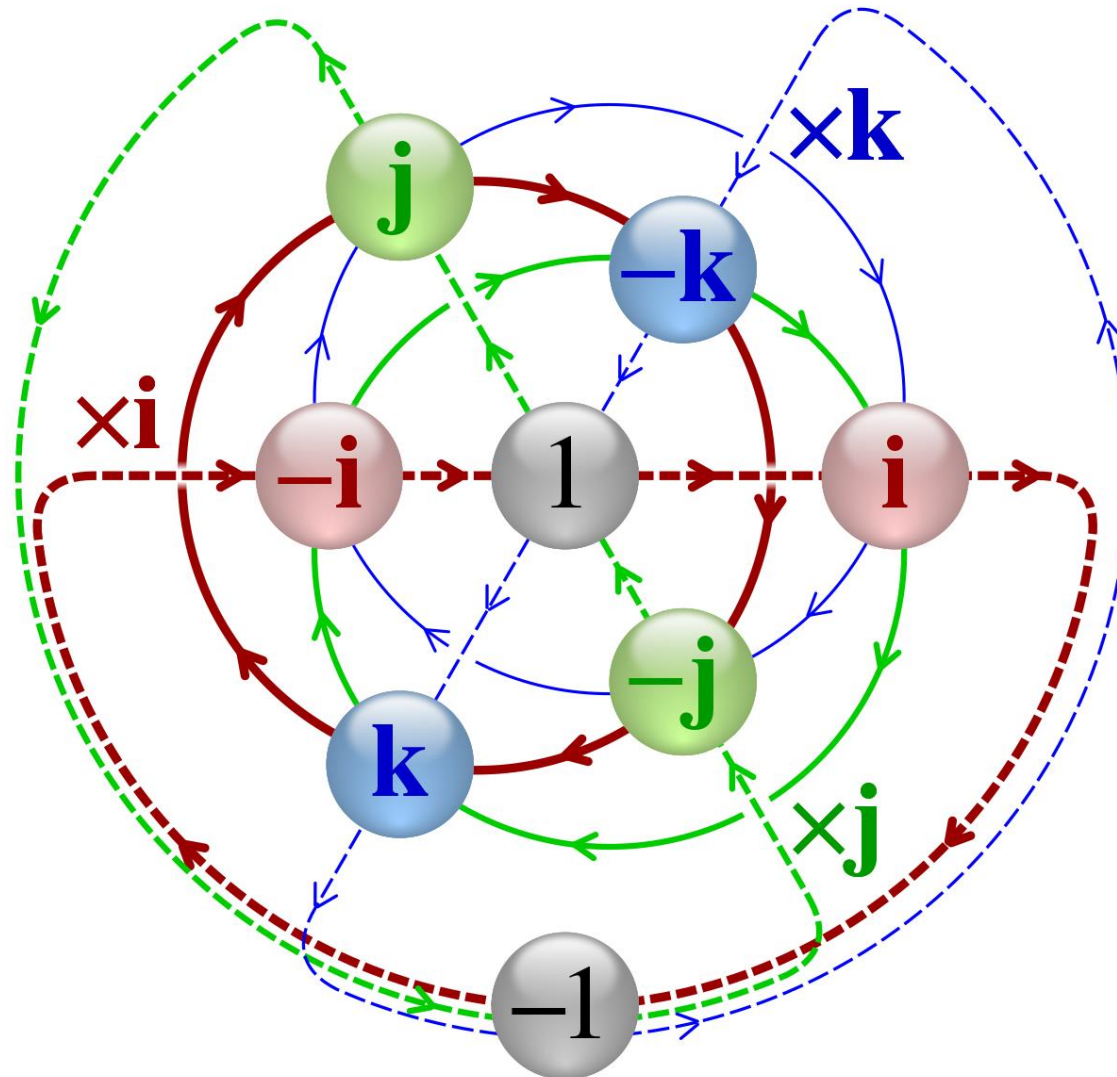
Table de multiplication

$$Q = \{\pm 1, \pm i, \pm j, \pm k\}$$

$$(-1)^2 = 1, \quad i^2 = j^2 = k^2 = -1$$

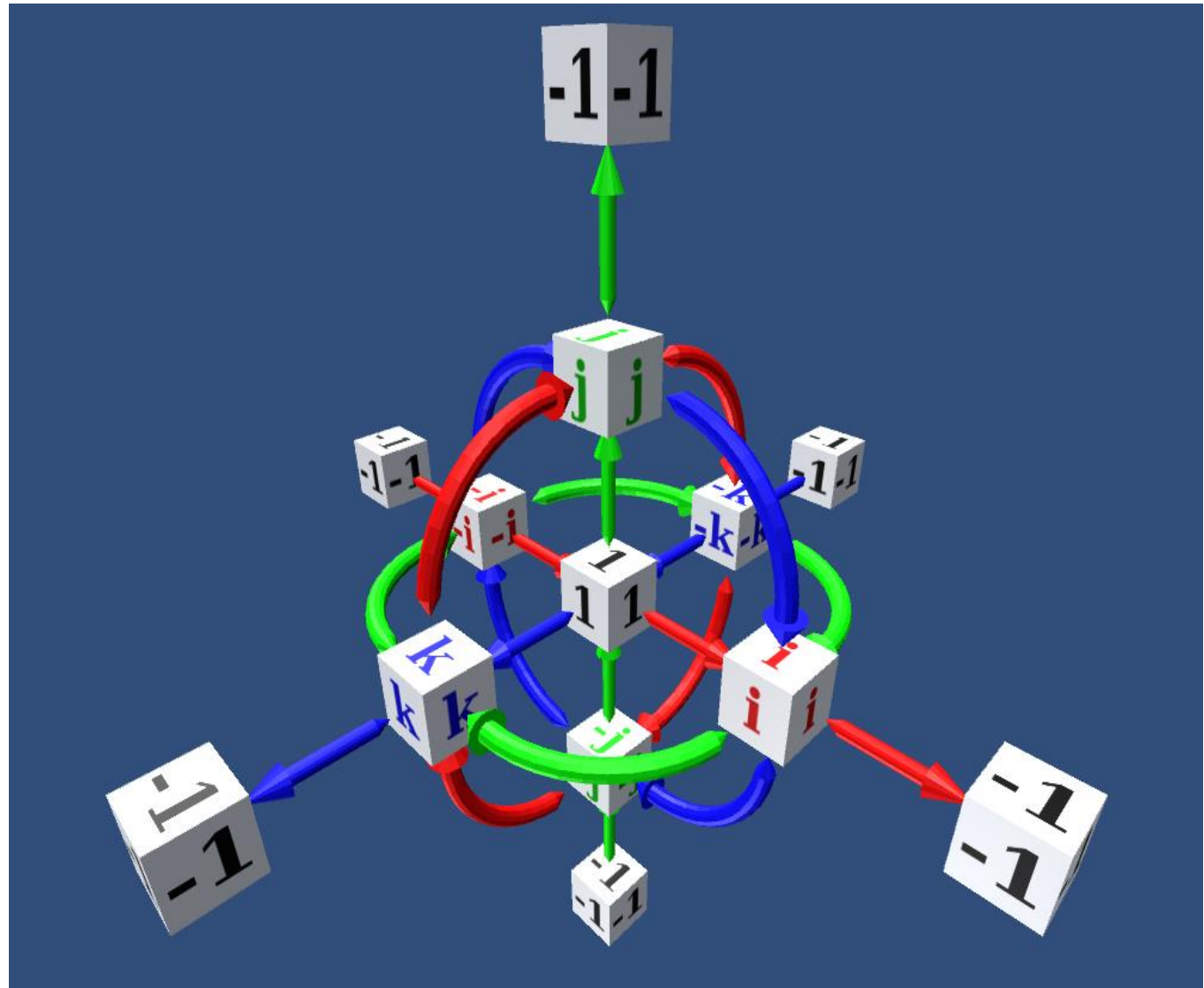
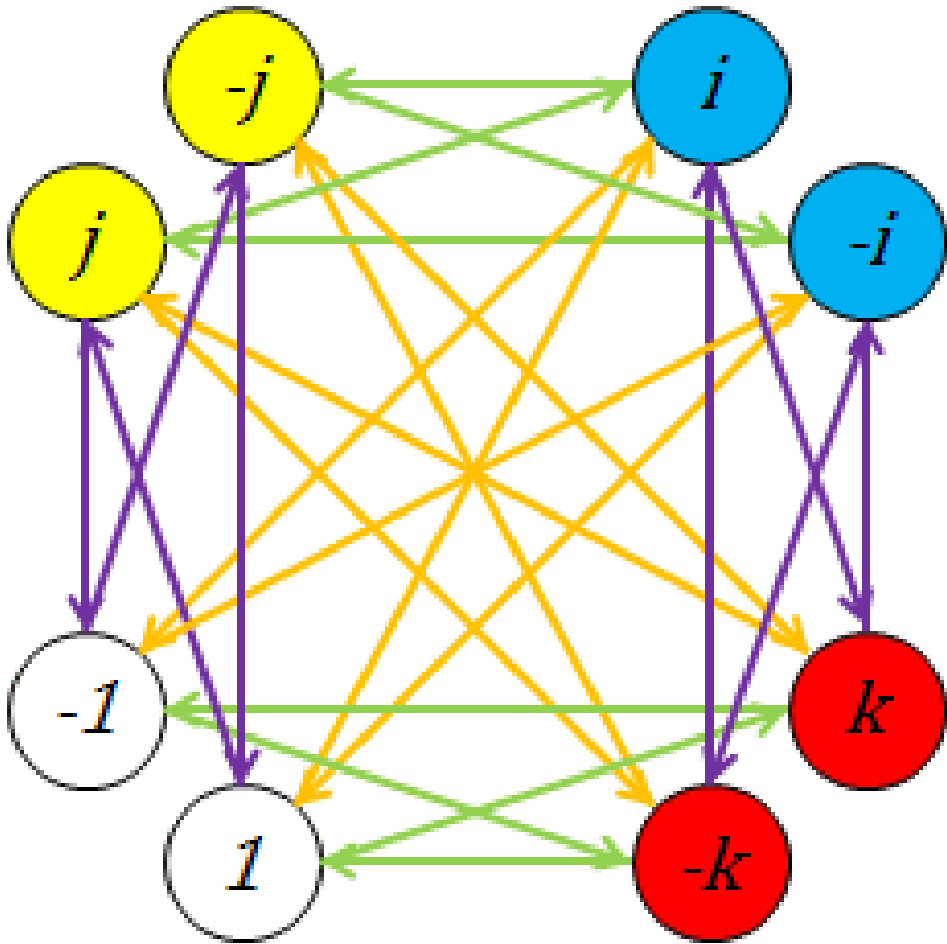
$ij = k,$	$jk = i,$	$ki = j$
$ji = -k,$	$kj = -i,$	$ik = -j$

Représentation des Quaternions

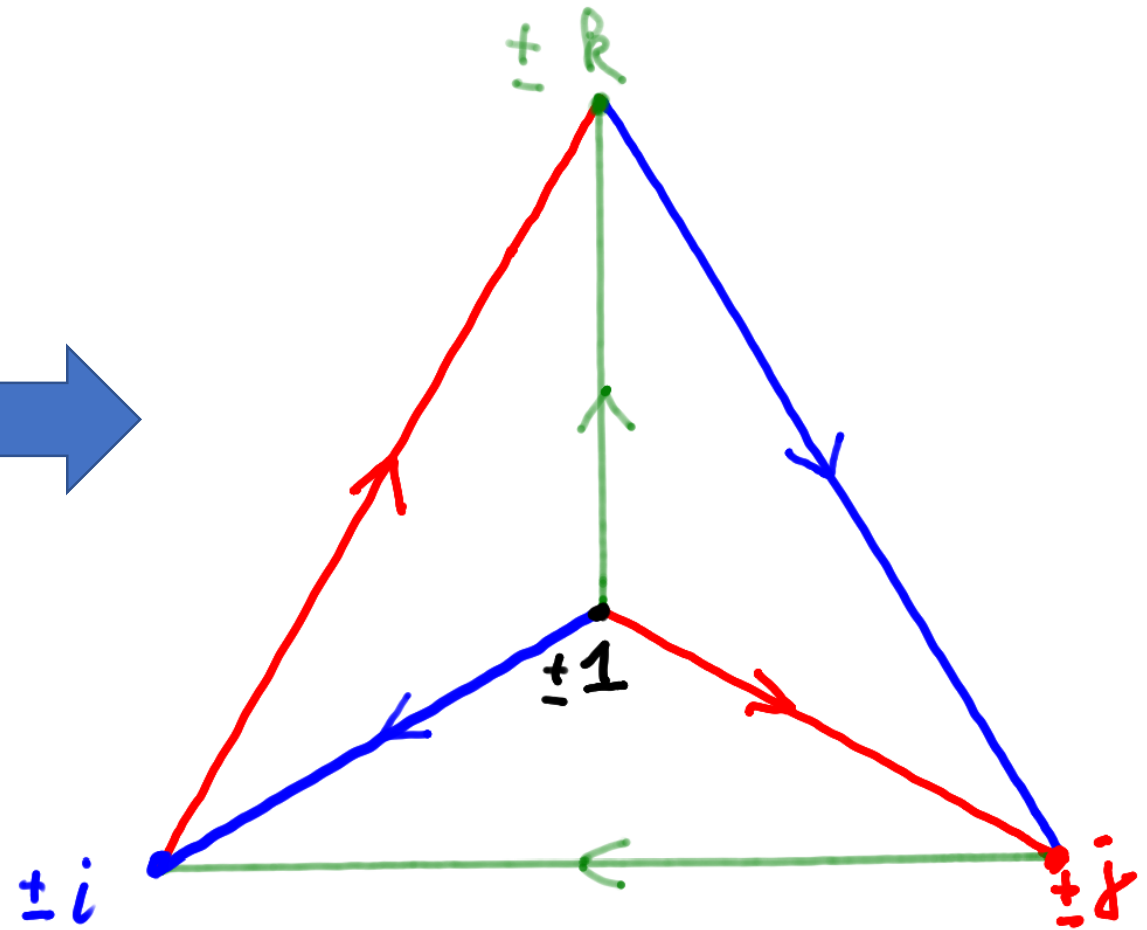
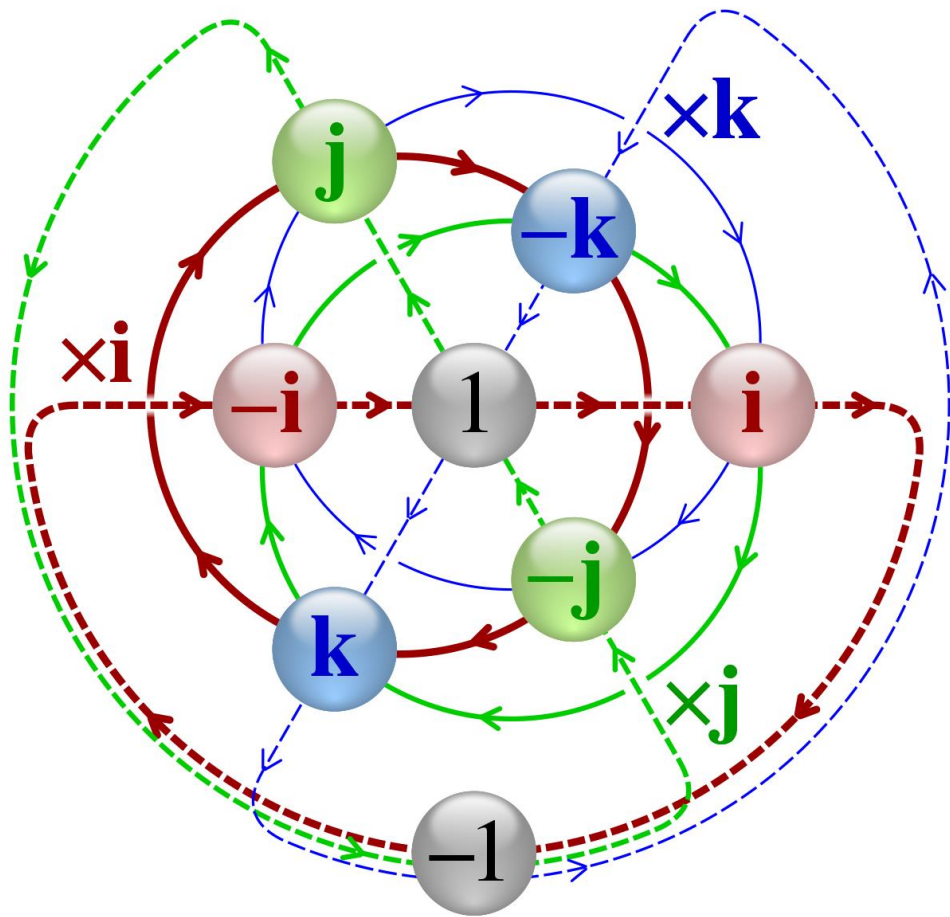


Graphe de Cayley

Représentation des Quaternions

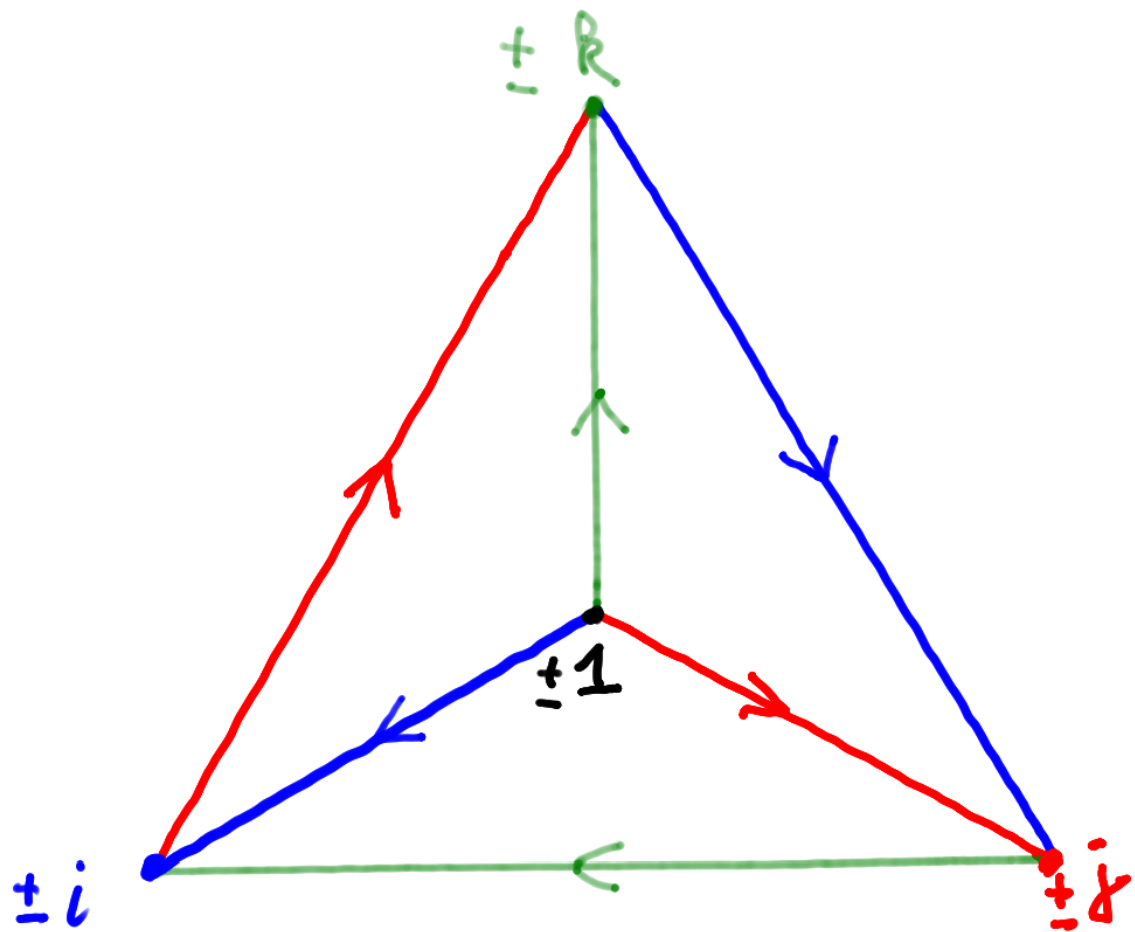
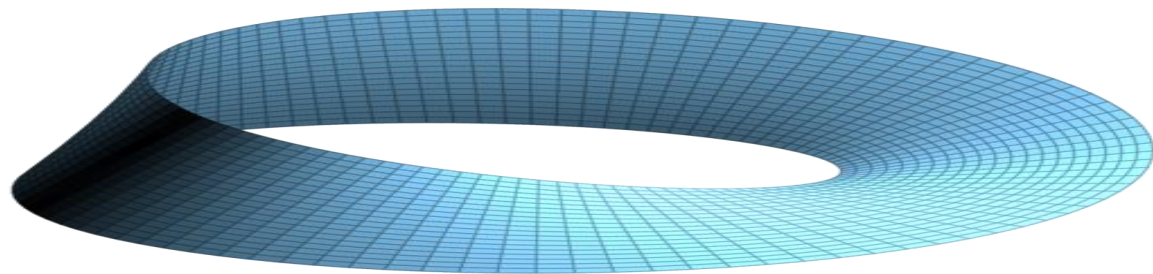


Représentation des Quaternions





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