$So(3)$ 1th boundary map is transpose of 3
2th boundary map is transpose of 2
3th boundary map is transpose of 1
1 th homology generators are

$$(1, 1, 1, 1)$$

2 th homology generators are

$$(0, 1, 0, 1, 0, 1, 1, 0)$$

3 th homology generators are

$$(0, 0, 0, 0, 0, 1, 0, 1)$$

4 th homology generators are

$$(0, 0, 0, 1)$$
$$H_1 = \mathbb{Z}_2^1$$
$$H_2 = \mathbb{Z}_2^1$$
$$H_3 = \mathbb{Z}_2^1$$
$$H_4 = \mathbb{Z}_2^1$$