

Mathematical morphology provides a useful toolbox made of non-linear operators capable of filtering and segmenting geometrical objects. Recently, abstract (simplicial and cubical) complexes have been promoted to handle topological properties of digital objects as used in computer graphics and image analysis. Despite the increasing popularity of both fields, their intersection (mathematical morphology on complexes) is not yet fully explored. In this work, our main result is a set of morphological operators (erosions/dilations, granulometries/anti-granulometry, and alternate sequential filters) that act on the subcomplexes of a space which is itself a simplicial (or cubical) complex. These operators are derived from the closure and star operators, that are simple and very common while working with simplicial complexes. We illustrate the proposed operators with applications to mesh and image processing processing