

**A METHOD, PROGRAM PRODUCT AND APPARATUS FOR MODEL BASED
GEOMETRY DECOMPOSITION FOR USE IN A MULTIPLE EXPOSURE PROCESS**

ABSTRACT

A method of decomposing a target pattern having features to be imaged on a substrate so as to allow said features to be imaged in a multi-exposure process. The method includes the steps of: (a) segmenting a plurality of the features into a plurality of polygons; (b) determining the image log slope (ILS) value for each of the plurality of polygons; (c) determining the polygon having the minimum ILS value, and defining a mask containing the polygon; (d) convolving the mask defined in step (c) with an eigen function of a transmission cross coefficient so as to generate an interference map, where the transmission cross coefficient defines the illumination system to be utilized to image the target pattern; and (e) assigning a phase to the polygon based on the value of the interference map at a location corresponding to the polygon, where the phase defines which exposure in said multi-exposure process the polygon is assigned.

FIGURE 1