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Automated determination of CAD layout failures through focus: experiment and simulation

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ABSTRACT

This paper describes a software program that compares the simulated aerial image of a mask pattern with the original, desired, mask pattern. The program uses the Fast Aerial Image Model (FAIM) to simulate the aerial image. A specific intensity contour is chosen and the distance from the contour to the desired design is calculated. Regions where the distance exceeds a specified tolerance are deemed failures and flagged. Corner-rounding errors are handled differently to line edge position errors. The threshold intensity used can be specified by the user, alternatively a 'critical feature' may be defined and the threshold set to the intensity value required to print it on size. In addition to describing the program, we also show examples of how the aerial image contour predictions compare with simulations of resist profiles and actual printed resist images for the case of a SRAM cell.