Brion Adds Mask 3D Imaging Effects to OPC Tool

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To allow for more accurate optical proximity correction (OPC) and OPC verification Santa Clara, Calif.-based Brion Technologies Inc. today rolled out Tachyon M3D that incorporates mask 3D imaging effects.

Brion CEO Eric Chen said customers had asked for mask 3D effects into the company’s computational lithography products, which aim to help IC manufacturers achieve accurate OPC and OPC verification in advanced development fabs.

Below the 65nm node, 4x reticles for leading-edge chip designs have features smaller than the wavelength of light used in advanced exposure tools that can cause significant scattering and polarization of the exposure light and must be accounted for to achieve accurate high numerical aperture (NA) lithography, the company explained.

The Tachyon M3D tool constructs image-based photomask imaging models using rigorous electromagnetic field simulation of the light passing through the 3D mask feature topography on 4x reticles.

For high-speed, full-chip computational lithography, Brion said Tachyon M3D replaces the thin mask approximation with its image-based mask 3D models, then computes and combines wafer image intensities from different source polarizations, before resist and etch computations.

These capabilities are believed to be important when applied to through-focus lithography modeling because of the significant mask 3D effects that can occur across the full range of focus variation during the manufacturing process, and are critical to OPC and OPC verification since focus variation is inevitable, becoming more severe as lithography process windows shrink with each successive technology node.