Tiago Botari

Tool-to-Tool Matching for Overlay Metrology

Ensuring consistency and accuracy in measurements performed by tools is a persistent challenge in research and high-technology manufacturing.
In semiconductor fabrication, this challenge becomes increasingly critical as device features approach the nanometre scale.
To increase throughput during chip fabrication, multiple identical tools are often operated in parallel.
However, even small variations in tool components or gradual drifts over a tool's lifetime can introduce measurable bias in the results.
Recent advances in computational methods, including data-driven modelling and signal processing, offer new opportunities to improve tool matching.
In this challenge, we focus on matching optical metrology systems used for overlay measurements, i.e., matching images.
The goal is to enhance measurement reliability and enable scalable, high-throughput metrology in large-scale semiconductor fabrication.