

Seminar 2022

Math

**A novel approach for wafer defect classification
based on topological data analysis**

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Abstract: In this talk, I will present a novel way to represent the shape of the wafer defect pattern as a finite-dimensional vector, which will be used as an input for a neural network algorithm for classification. The main idea is to extract the topological features of each pattern by using the theory of persistent homology from topological data analysis (TDA). Through some experiments with a simulated dataset, we show that the proposed method is faster and much more efficient in training with higher accuracy, compared with the method using convolutional neural networks (CNN) which is the most common approach for wafer map defect pattern classification. Moreover, it was shown that our method outperforms the CNN-based method when the number of training data is not enough and is imbalanced. This is a joint work with Seungchan Ko(SKKU).



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