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THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Faculty Seminar

on Wednesday, Jan 12, 2022 at 15:15

The seminar will be over the zoom: <https://weizmann.zoom.us/j/99292982651?pwd=cldIaHJySWhueE1pTXdFd1NvUHNmQT09>  
Oded Stein Massachusetts Institute of Technology

Mathematical Foundations of Robust Geometry and Fabrication

Abstract:

Current geometry methods for creating and manipulating shapes on computers can sometimes be unreliable and fail unpredictably. Such failures make geometry tools hard to use, prevent non-experts from creating geometry on their computers, and limit the use of geometry methods in domains where safety is critical. We will discuss my recent efforts in proving when existing methods work as intended, my work in making methods more robust to imperfect input, my work in the creation of new reliable tools with mathematical guarantees, and my future efforts towards a reliable geometry pipeline. When used for computational fabrication, geometry methods can be expensive, finicky, and require a controlled environment. I will show you how simple and economical manufacturing techniques can be used for computational fabrication by exploiting the geometric constraints inherent in specific materials and fabrication methods. We will take a look at how I create geometric tools to design for constrained fabrication techniques, and discuss how computational fabrication can be made both economical as well as accessible in difficult environments. Zoom: <https://weizmann.zoom.us/j/99292982651?pwd=cldIaHJySWhueE1pTXdFd1NvUHNmQT09>