

Almost-rigidity of frameworks

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Rigidity theory describes frameworks or tensegrities whose edges have fixed lengths, but in the real world these objects are never perfectly rigid. The cables of a tensegrity built of springs can stretch ever so slightly, the bars of a framework built of wood can change bend or change length, the stiff bonds of a molecule can vibrate, and even a computer representation of these objects never has exactly the desired edge lengths, because of the computer's finite precision. In this talk I will show how the tools of rigidity theory, specifically prestress stability, can be extended to study frameworks and tensegrities whose edges can change length by a small amount. This is joint work with Steven Gortler and Louis Theran.