Protein Folding: Planar Configuration Spaces of Disc Arrangements and Hinged Polygons: *Protein Folding in Flatland*

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Abstract

We look into the decidability of whether a hinged configuration locks.

1 Introduction

We look into the decidability of continuity on planar configuration space using regular, unitary hexagonal polygons. These polygons can also represent unit disk configurations [1]

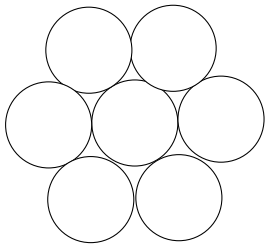

Figure 1: A locked 7 ball configuration

Motivation Protein folding, graphite, crystalline structures in metallurgy; disc packing; hexagonal configurations; Determine whether chemical structures are realizable.

Outline Section 2 covers the necessary mathematical concepts to understanding the problem. Section 3 explains the problem, Section 4 covers the results and findings about the problem. Section 5, the conclusion, offers final remarks on the problem.

2 Background

Here we review some of the necessary mathematics behind the problem. The definitions found in this chapter are those found in [**?**, 2, 4, 3].

3 Problem

3.1 Problem Statement

text

3.2 Decidability of Problem

test

3.3 Hexagonal Locked Configuration

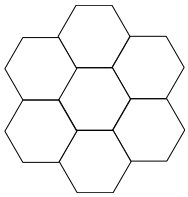

Figure 2: 7 hexagonal configuration

4 Conclusion

We conclude...

References

[1] Heinz Breu and David G. Kirkpatrick. Unit disk graph recognition is np-hard. *Computational Geometry*, 9(12):3 – 24, 1998. Special Issue on Geometric Representations of Graphs.

[2] E.D. Demaine and J. O'Rourke. *Geometric Folding Algorithms: Linkages, Origami, Polyhedra*. Cambridge University Press, 2008.

[3] G.N. Frederickson. *Dissections: Plane and Fancy*. Cambridge University Press, 1997.

[4] K. Stephenson. *Introduction to Circle Packing: The Theory of Discrete Analytic Functions*. Cambridge University Press, 2005.