

## Analysis of 6-bar Bricard linkages

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# Analysis of 6-bar Bricard Linkages

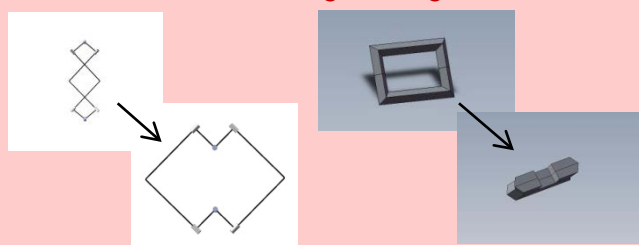
## Objectives:

- Analyze the deployment paths of a foldable and non-foldable 6-bar linkage.
- Analyze the energies of cyclohexane conformations.
- Explore future collaboration between mechanical and chemical engineering.

## Foldable 6-bar Bricard Linkages

### Research Finding:

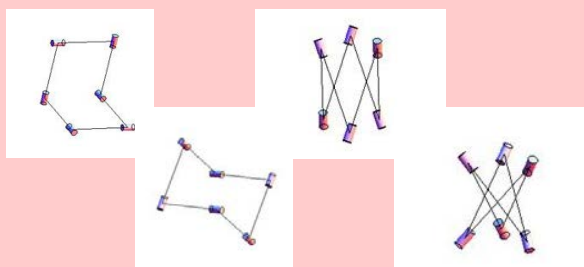
- Bifurcation point cases
- Bifurcation point configurations
- Conditions to avoid bifurcation point
- Parameters conversion from 6-bar frame linkages to Bricard Linkages



## Non-foldable 6-bar Bricard Linkages

### Research Finding:

- Bifurcation point cases
- Structure cases
- Bifurcation point configurations
- Structure configurations
- Express ion of all angles in functions of any one of six joint angles as input
- Stationary configurations



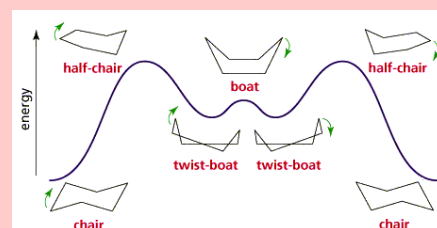
## Energies of Cyclohexane Conformations

### Using

- Research finding of non-foldable 6-bar Bricard linkage
- Molecular mechanics

### Research Finding:

- Find energy ratios amongst boat form, twisted boat form and chair form of cyclohexane.
- Conclude Chair form and boat form have the lowest and highest energies respectively.



## Future Work

- Satellite mechanisms
- Research on cyclic molecules with 6 identical atoms.

## References

- Hutt, T (2007), Deployable Rings, Fourth-year undergraduate project, University of Cambridge.
- Baker, E J (1986), Limiting positions of a Bricard linkage and their possible relevance to the cyclohexane molecule, Mechanism and Machine Theory, 21(3), 253-260

