

Tuning friction properties of graphene sheets using kirigami cuts and inverse design

Optional Subtitle

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Presentation Overview

- 1 Introduction
- 2 Methodology
- 3 Text Examples
 - Paragraphs and Lists
 - Blocks
 - Columns
- 4 Table and Figure Examples
 - Table
 - Figure
- 5 Mathematics
- 6 Referencing

Project description in 60 seconds

- 1 Alter graphene sheet by making selected cuts on an atomic scale.
- 2 Calculate the effects on frictional properties using MD simulations.
- 3 Use inverse design on data to predict cut patterns for desirable properties.
 - E.g. coupling stretch and friction to achieve negative friction coefficients in nanomachines with coupling of normal force and stretch.

Video test

Motivation

- Friction has a huge impact in various engineering applications.
- Most obvious advantages: Energy efficiency

“The economic aspects of tribology are significant. Investigations by a number of countries arrived at figures of savings of 1.0% to 1.4% of the GNPs, obtainable by the application of tribological principles.”

— Professor H. Peter Jost, President, International Tribology Council

- Inverse Design of Inflatable Soft Membranes Through Machine Learning
- Accelerated Search and Design of Stretchable Graphene Kirigami Using Machine Learning
- Designing complex architected materials with generative adversarial networks

Paragraphs of Text

Sed iaculis **dapibus gravida**. Morbi sed tortor erat, nec interdum arcu. Sed id lorem lectus. Quisque viverra augue id sem ornare non aliquam nibh tristique. Aenean in ligula nisl. Nulla sed tellus ipsum. Donec vestibulum ligula non lorem vulputate fermentum accumsan neque mollis.

Sed diam enim, sagittis nec condimentum sit amet, ullamcorper sit amet libero. Aliquam vel dui orci, a porta odio.
— *Someone, somewhere...*

Nullam id suscipit ipsum. Aenean lobortis commodo sem, ut commodo leo gravida vitae. Pellentesque vehicula ante iaculis arcu pretium rutrum eget sit amet purus. Integer ornare nulla quis neque ultrices lobortis.

Lists

Bullet Points and Numbered Lists

- Lorem ipsum dolor sit amet, consectetur adipiscing elit
 - Aliquam blandit faucibus nisi, sit amet dapibus enim tempus
 - Lorem ipsum dolor sit amet, consectetur adipiscing elit
 - Nam cursus est eget velit posuere pellentesque
 - Nulla commodo, erat quis gravida posuere, elit lacus lobortis est, quis porttitor odio mauris at libero
-
- 1 Nam cursus est eget velit posuere pellentesque
 - 2 Vestibulum faucibus velit a augue condimentum quis convallis nulla gravida

Blocks of Highlighted Text

Block Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue.

Example Block Title

Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan.

Alert Block Title

Pellentesque sed tellus purus. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos.

Suspendisse tincidunt sagittis gravida. Curabitur condimentum, enim sed venenatis rutrum, ipsum neque consectetur orci.

Heading

- 1 Statement
- 2 Explanation
- 3 Example

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

Table

Subtitle

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table: Table caption

The logo for Creodocs, featuring the word "creodocs" in a bold, lowercase, sans-serif font. The letters are dark blue or black, and the overall style is clean and modern.

Figure: Creodocs logo.

Definitions & Examples

Definition

A **prime number** is a number that has exactly two divisors.

Example

- 2 is prime (two divisors: 1 and 2).
- 3 is prime (two divisors: 1 and 3).
- 4 is not prime (**three** divisors: 1, 2, and 4).

You can also use the `theorem`, `lemma`, `proof` and `corollary` environments.

Theorem, Corollary & Proof

Theorem (Mass-energy equivalence)

$$E = mc^2$$

Corollary

$$x + y = y + x$$

Proof.

$$\omega + \phi = \epsilon$$



Equation

$$\cos^3 \theta = \frac{1}{4} \cos \theta + \frac{3}{4} \cos 3\theta \quad (1)$$

Example (Theorem Slide Code)

```
\begin{frame}  
\frametitle{Theorem}  
\begin{theorem} [Mass--energy equivalence]  
$E = mc^2$  
\end{theorem}  
\end{frame}
```


Slide without title.

An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2022, Kennedy, 2023].

References



John Smith (2022)

Publication title

Journal Name 12(3), 45 – 678.



Annabelle Kennedy (2023)

Publication title

Journal Name 12(3), 45 – 678.

Acknowledgements

Smith Lab

- Alice Smith
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The End

Questions? Comments?