

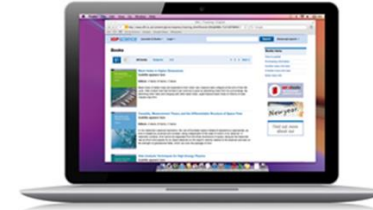
IOP

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- <https://iopscience.org>



IOPscience

<https://iopscience.org>

主页和搜索

The screenshot shows the IOPscience website homepage. At the top, there is a navigation bar with the IOPscience logo, a search icon, and links for Journals, Books, Publishing Support, and Login. Below the navigation bar, there are several sections: 'Latest news from Physics World', 'Latest news and articles', 'Featured journals', and 'Latest books'. Each section contains a list of articles or book covers with brief descriptions and dates. On the right side, there are links for 'Customer Services' and 'Librarians'. Three callout boxes are overlaid on the image: one pointing to the search bar, one pointing to the 'Journals' and 'Books' links, and one pointing to the 'Customer Services' link.

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图书馆员专用页面

论文查找页面

The screenshot shows the IOPscience search interface. At the top, there is a navigation bar with 'IOPscience', 'Journals', 'Books', 'Publishing Support', and 'Login'. A search bar contains 'Search IOPscience content' and a 'Search' button. Below the search bar, a dropdown menu is set to '2D Mater. (2014 - present)'. A callout box points to this dropdown with the text: '这里您可以选择通过浏览期卷期查找论文'.

On the left side, there is a 'Refine your search' section with 'Apply filters' and 'Clear filters' buttons. Below these are four filter categories: 'Date published', 'Journals', 'Authors', and 'Publication type'. A callout box points to these filters with the text: '如果您希望对出版时间、期刊、作者和出版类型加以限制, 可以勾选这里的复选框'.

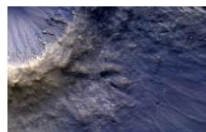
The main content area displays 'The top 500 results for "" are:'. Below this, there are options for 'Within: Anytime', 'Email alert', 'RSS search', and 'Sort by: Relevance'. A callout box points to the 'Sort by' dropdown with the text: '可以通过相关性和时效性对搜索结果进行排序'.

The search results list several journal articles, including 'Prospects of III-nitride optoelectronics grown on Si' and 'Elongated nanostructures for radial junction solar cells'. Each result includes the title, authors, and publication details, along with links to 'View abstract', 'View article', and 'PDF'.

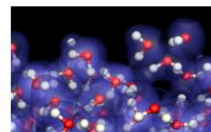
学科选集

Subject collections

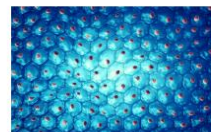
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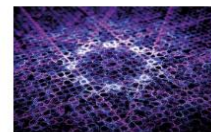
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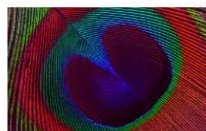
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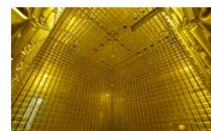
Condensed matter



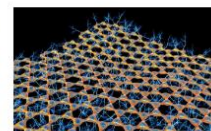
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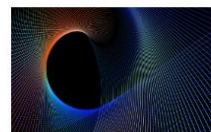
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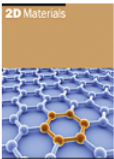
About IOPscience

学科选集的内容包含研究新闻、热点评论、学科综述、精选论文、作者资源、近期会议资讯、以及相关的期刊、电子书和包括视频摘要以及作者采访在内的多媒体内容等，帮助读者更加全面地了解学科的发展

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2014-present 2D Materials
doi:10.1088/issn.2053-1583
Online ISSN: 2053-1583

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- 38 Graphene prevents neurostimulation-induced platinum dissolution in fractal microelectrodes
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Article Page

The image shows a screenshot of an IOPscience article page with several Chinese annotations. The page title is "2D Materials" and the article title is "Increasing the light extraction and longevity of TMDC monolayers using liquid formed micro-lenses". The authors are C S Woodhead, J Roberts, K Novoselov, and R J Young. The article is published in "2D Materials, Volume 4, Number 1" on 7 December 2016. The page includes a PDF download button, a MathJax icon, and a "Related content" sidebar. The annotations are as follows:

- PDF 下载按钮**: Points to the "Article PDF" button.
- Article level metrics**: Points to the "3890 Total downloads" and "168 Video abstract views" section.
- Mathjax**: Points to the MathJax icon and the text "开启 MathJax 功能后, 公式将不再是一张图片, 可以被轻松导入".
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电子书首页

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章节页面

The screenshot shows a web page for a chapter titled "Climate Change Resilience in the Urban Environment". The page is part of a book, "Climate Change Resilience in the Urban Environment", published by IOP Publishing. The chapter is titled "Climate change and its impacts" by Tristan Kershaw, published in December 2017. The page offers options to download the PDF chapter or the ePub chapter. There are also links to download the complete PDF book, ePub book, or Kindle book. The page includes a table of contents, a list of related content, and a list of references. A callout box points to the "Related content" section, stating "这里您可以找到与本书相关的期刊内容" (Here you can find journal content related to this book). Another callout box points to the "Chapter information" section, stating "这里您可以快速查看书中的图表和参考文献" (Here you can quickly view the charts and references in the book). A third callout box points to the "Download" section, stating "您可下载章节或按整本书下载" (You can download the chapter or download the whole book).

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Climate Change Resilience in the Urban Environment

CHAPTER 1 • FREE TO READ

Climate change and its impacts

Tristan Kershaw
Published December 2017 • Copyright © IOP Publishing Ltd 2017
Pages 1-1 to 1-27

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Chapter information

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Abstract

In this chapter we examine the origins of the natural greenhouse effect and the role different atmospheric gases play in creating the Earth's climate. We then consider how anthropogenic emissions are altering the status quo and how scientist try to predict how the weather and climate of the future may be altered.

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IOP Publishing

Climate is a difficult concept for people to deal with, as generally we think in terms of short-term variations or weather, and our memory is drawn towards more extreme events such as heat waves, cold snaps and storms. Climate, however, is defined as the long-term averages and ranges of different

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- First Connection between Cold Gas in Emission and Absorption: CO Emission from a Galaxy-Quasar Pair
- Evaluating the Morphology of the Local Interstellar Medium: Using New Data to Distinguish between Multiple Discrete Clouds and a Continuous Medium

Abstract

- 1.1. The greenhouse effect
- 1.2. The historic climate signal
- 1.3. The anthropogenic greenhouse effect
- 1.4. Climate change projections
- 1.5. Climate change impacts

References

Footnotes

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平台功能亮点

内置视频

that has given us this high technology life. This is nicely illustrated by Professor Jesper Nygård in the video of figure 1.1. Several research technologies are discussed in this video, and we will treat many of them in the following chapters of this book.

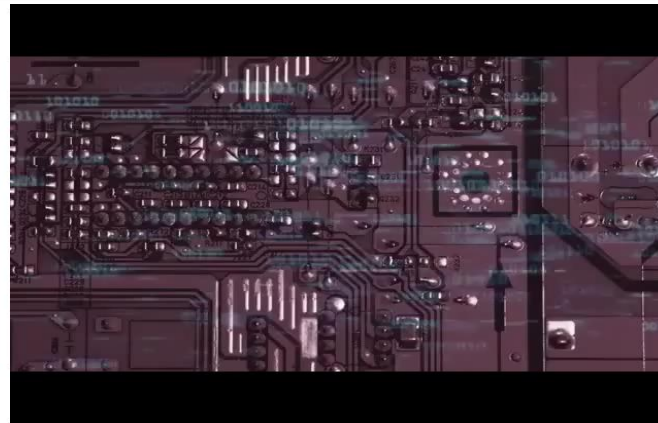
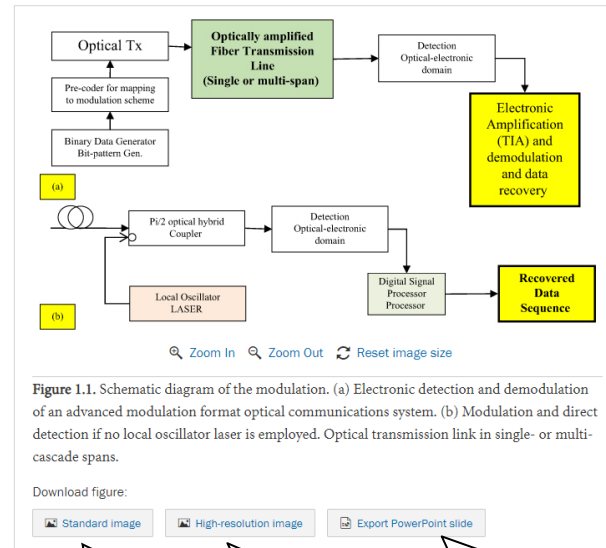


Figure 1.1. Jesper Nygård on nanotechnology, artificial atoms, and the future of computing. (Video hosted by Professor [Jesper Nygård](#), Neils Bohr Institute, and produced by the Compound for Neils Bohr Institute, included [here](#) with their permission.)



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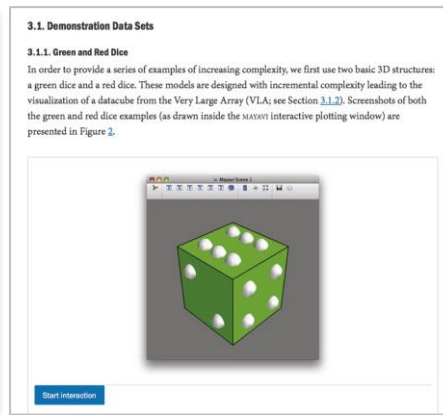
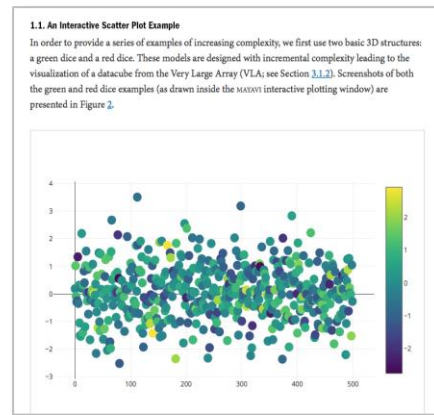
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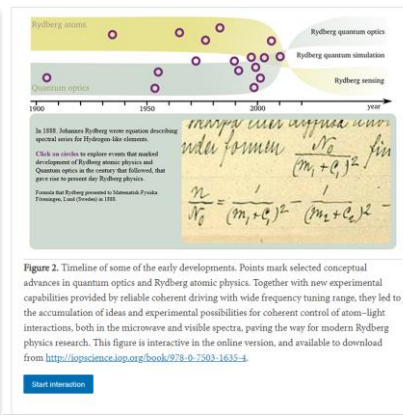
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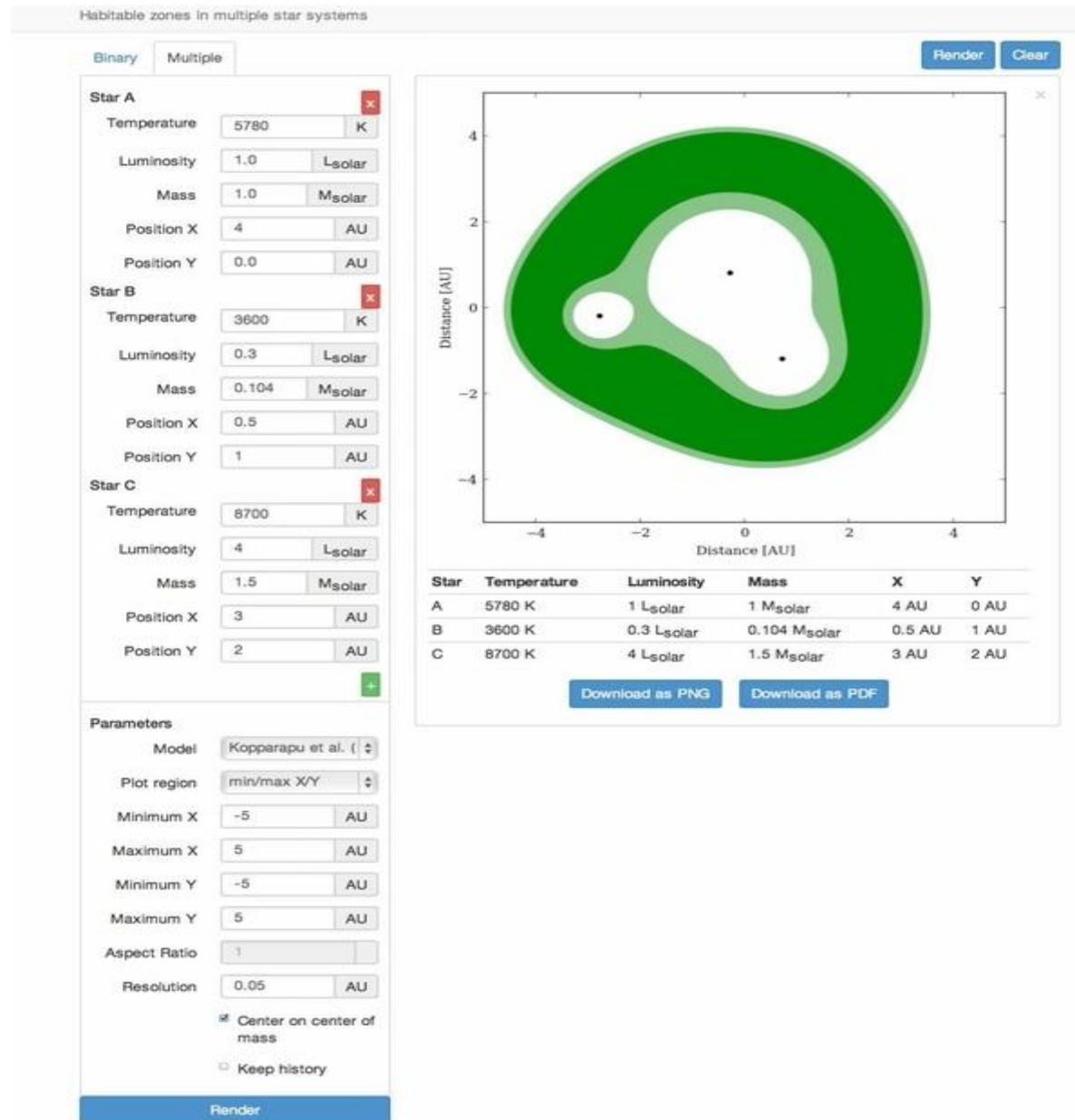
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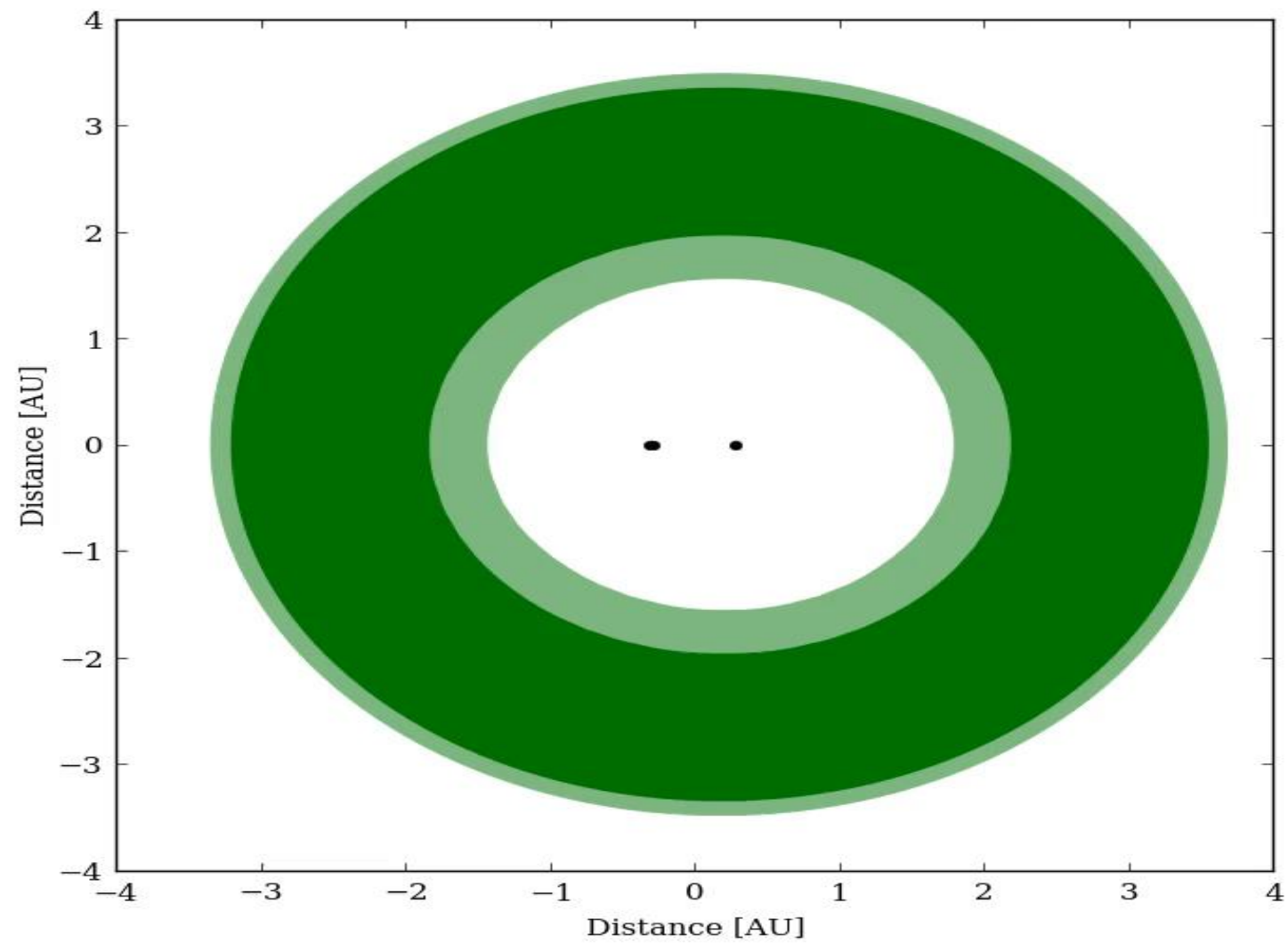
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交互问答 - 习题

1.9. Exercises

Exercise 1:

1. The metric on the sphere is given by

$$d\Omega^2 = d\theta^2 + \sin^2\theta d\phi^2. \quad (1.174)$$

Compute the non-zero components of the Christoffel symbol.

2. Compute the non-zero components of the Riemann tensor and the Ricci tensor. Compute the Ricci scalar.
3. Recall that the metric in polar coordinates on R^3 is given by

$$ds^2 = dr^2 + r^2 d\Omega^2. \quad (1.175)$$

The components of this metric are independent of φ . Determine the Killing vector associated with rotation around the z axis with angle φ .

4. Determine the Killing vectors associated with rotations on the sphere. Hint: use ∂_x , ∂_y , and ∂_z as basis elements.

Solution 1:

1. $\Gamma_{\phi\phi}^{\theta} = -\sin\theta \cos\theta$, $\Gamma_{\theta\theta}^{\phi} = \cot\theta$.
2. $R_{\phi\theta\theta\phi} = \sin^2\theta$, $R_{\theta\phi\phi\theta} = \sin^2\theta$,
 $R_{\theta\theta} = 1$, $R_{\phi\phi} = \sin^2\theta$, $R_{\theta\phi} = 0$,
 $R = 2$.
3. $R = \partial_{\phi} = -y\partial_x + x\partial_y = (-y, x, 0)$.
4. $T = (\vec{r} \times \vec{\partial})_x = (0, -z, y)$,
 $S = (\vec{r} \times \vec{\partial})_y = (z, 0, -x)$.

点击图片中的“Solution”按钮查看答案

Exercise 2:

The metric on the hyperboloid H^2 (Poincaré half-plane) is given by

$$ds^2 = \frac{r^2}{y^2}(dx^2 + dy^2). \quad (1.176)$$

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导出公式

The screenshot shows the IOPscience website interface. At the top, there is a navigation bar with 'IOPscience', 'Journals', 'Books', 'Publishing Support', and 'Login'. A search bar is present with the text 'Search IOPscience content'. Below the navigation bar, the page title is 'Lectures on General Relativity, Cosmology and Quantum Black Holes'. The main content area displays 'CHAPTER 1 • FREE TO READ' and 'General relativity essentials' by Badis Ydri. There are buttons for 'PDF chapter' and 'ePub chapter'. A 'Turn on MathJax' button is highlighted with a red box. A callout box with Chinese text points to this button: '点击“Turn on MathJax”开启MathJax功能'. Other elements include 'Table of contents', 'Next chapter', 'Export citation and abstract' (with BibTeX and RIS buttons), and a 'Related content' sidebar.

1.6.1. Tidal gravitational forces

Let us first start by describing tidal gravitational forces in Newtonian physics. The force of gravity exerted by an object of mass M on a particle of mass m a distance r away is $\vec{F} = -\hat{r}GMm/r^2$, where \hat{r} is the unit vector pointing from M to m and r is the distance between the center of M and m . The corresponding acceleration is $\vec{a} = -\hat{r}GM/r^2 = -\nabla\phi$, where $\phi = -GM/r$. We assume now that the mass m is spherical of radius Δr . The distance between the center of M and the center of m is r . The force of gravity exerted by the mass M on a particle of mass m is given by $\vec{F} = -\hat{r}GMm/r^2$. The corresponding acceleration is

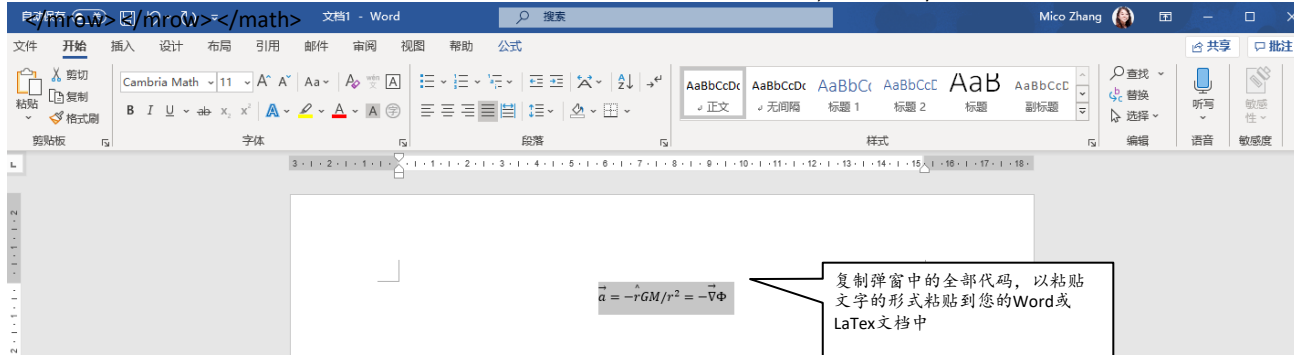
$$\vec{a} = -\hat{r}GM \frac{1}{(r + \Delta r)^2} = -\hat{r}GM \frac{1}{r^2} \left(1 - \frac{2\Delta r}{r} + \dots\right) \quad (1.99)$$

The screenshot shows a context menu for a MathJax formula. The menu items are: 'Show Math As', 'Math Settings', 'Accessibility', 'Language', 'About MathJax', and 'MathJax Help'. The 'Show Math As' option is highlighted with a red box. A callout box with Chinese text points to this option: '鼠标右键点击公式，选择“Show Math As”'.

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Meet the author F J Duarte

Quantum entanglement (QE) is one of the most mysterious and promising subjects in physics. With applications in cryptographic space-to-space, space-to-earth and fibre communications, in addition to teleportation and quantum computing, QE goes beyond fascination and into the pragmatic spheres of commerce and the military. In this webinar author Dr Duarte will guide you through the research behind his book, Fundamentals of Quantum Entanglement. It is the first text to provide a side-by-side description of the philosophical path and the physical path to QE in a clear and cohesive manner.

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