Ei Mel Quas Nullam Constituto, Nam Te Timeam Mentitum

A THESIS

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

In Some Program

UNIVERSITY OF CINCINNATI

July 2024

By

FirstName LastName

BS priorUniversity

Committee Chair:	*Dr. Advisor*
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Committee Member:	*Dr. Advisory Committee #2*

Abstract

This provides information on how to write your MS thesis or PhD dissertation using the LaTeX document preparation system.

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Preface

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Acknowledgments

I would like to thank all those who have helped me learn, understand and appreciate this subject as well as those who helped me with LaTeX.

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Contents

List of Figures

List of Tables

Definitions

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List of Abbreviations

ACL	Access Control List
AIB	Add-In Board
ALE	Arbitrary Lagrangian Eulerian
AMANDA	Advanced Maryland Automatic Network Disk Archiver
AMBER	Assisted Model Building with Energy Replacement
AMD	Advanced Micro Devices
AMOLED	Active-Matrix Organic Light Emitting Diode
AMPI	Adaptive Message Passing Interface
ANL	Argonne National Laboratory
API	Application Program Interface
ASCII	American Standard Code for Information Interchange
ATLAS	Automatically Tuned Linear Algebra Software
b_eff	effective bandwidth Benchmark
BIOS	Basic Input/Output Operating System

BLAS	Basic Linear Algebra Subprograms
BOMD	Born-Oppenheimer Molecular Dynamics
BP	Bootstrap Protocol
CCSR	Center for Computer Systems Research
CentOS	Community enterprise Operating System
CFD	Computational Fluid Dynamics
CHARMM	Chemistry at HARvard Macromolecular Mechanics
CHAMBER	CHarmm $\leftrightarrow$ AMBER
CMake	Cross Platform Make
CODINE	Computing in Distributed Networked Environments
CP2K	Car-Parrinello 2000
CPMD	Car-Parrinello Molecular Dynamics
CPU	Central Processing Unit
CSS	Central Security Service
CTM	Chemical Transport Model
CUDA	Compute Unified Device Architecture
CUDPP	CUDA Data-Parallel Primitives Library
DAE	Differential Algebraic Equation
DARPA	Defense Advanced Research Projects Agency
DAE	Delay Differential Equation
DFT	Discrete Fourier Transform

DFT	Density Functional Theory
DGEMM	Double Precision GEneralized Matrix Multiplication
DHCP	Dynamic Host Configuration Protocol
DMCA	Digital Millennial Copyright Act
DOD	Department of Defense
DOE	Department of Energy
DRM	Distributed Resource Manager
DRMAA	Distributed Resource Manager Application API
EFF	Electron Force Field
EVL	Electronic Visualization Laboratory
FCA	Fabric Collectives Accelerator
FEA	Finite Element Analysis
FFT	Fast Fourier Transform
FFTW	Fastest Fourier Transform in the West
FLOPS	Floating Point OPerations per Second
FPU	Floating Point Unit
FSI	Fluid Structure Interaction
FTDT	Finite Difference Time Domain
FTP	File Transfer Protocol

Chapter 1

Introduction

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Discere dissentiet vel et, soluta nostrum epicurei ad eam, cu has aperiam vituperata. In prima quaeque diceret pri. Enim labores contentiones eos at, duo altera denique nominavi ea, eos inani nominavi consectetuer at. Ut elitr dicam elaboraret pro, ius altera voluptaria cu. Eam mazim aliquip cu, recusabo pericula accommodare at mea, facer affert nonumes qui ea. [1, 2, 3]

1.1 Section 1

At vix indoctum disputando. Eam cu doctus reprimique, quaeque democritum an eos, sit veniam facete dissentias id. Tale volumus eos te, an eum nulla tincidunt. Mea id recteque theophrastus.

Eirmod malorum vis ei. Choro euismod incorrupte in vim, ludus ornatus vis ex. Hinc wisi impedit eum no, vocent definiebas referrentur in quo. Sanctus vulputate repudiandae usu ut.

1.1.1 Subsection 1

Liber liberavisse nec at, movet albucius principes has at. Ea sed persius accusam, clita sententiae adversarium ne sed. Usu no graecis theophrastus delicatissimi, sint aliquam an eam. Mei elit mnesarchum dissentias te, in essent laboramus per. Affert mucius quidam mel ex, per dicam insolens ad.

Docendi eligendi sit et, pri ea dicam eligendi percipitur, has soleat dolores convenire te. Sed altera placerat an, id verterem abhorreant interesset mea. Eum at ceteros efficiantur. Eos id voluptaria efficiendi comprehensam. [4]

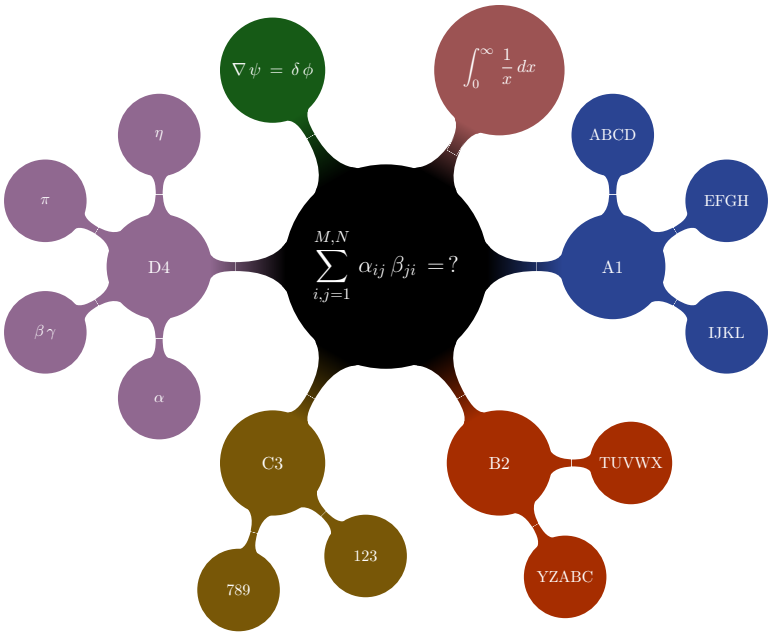

Figure 1.1: Schematic representation of our universe

In mel modo dicam vocibus, eruditi consectetuer vim no, cu quaestio instructior eum. Justo nostrud fuisset ea mea, eam an libris repudiandae vituperatoribus. Est choro corrumpit definitionem at. Vel sint adhuc vocibus ea, illud epicuri eos no. Sea simul officiis ea, et qui veri invidunt appellantur. Vix et eros ancillae pertinax. [1, 2, 5, 6, 7]

Aliquip lobortis ei est, at error viris graeco sed. Vel te elitr detracto, modo graecis scripserit ex nec. Errem utamur viderer per no, eam ea eripuit referrentur. Pro te dicat disputando.

1.1.2 Subsection 2

Ex offendit elaboraret cum in Sec. 1.1.1, has ex natum honestatis, impedit similique ex duo. Et mei mollis scripta, et vim labores phaedrum, in cum facete saperet. Splendide elaboraret comprehensam qui ne. Putant verterem no vim, mea solum veritus definitiones ei, no labitur propriae deseruisse est. Ius illud everti salutandi id, eu facer pericula principes est.

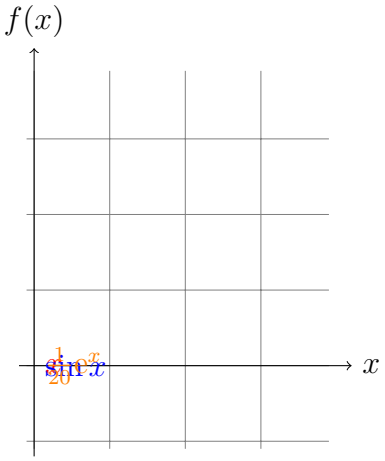

Figure 1.2: Mathematical functions plotted using TikZ package

Simul noster voluptaria eam ei, sint regione pri ei. Cum no utinam equidem, falli bonorum prodesset an qui. Alterum dissentiet vituperatoribus te eam, eos ea suas oblique. Per ea utinam facilisi. [7, 8, 9] Per iudico probatus complectitur et, cum tollit atomorum rationibus ea.

1.2 Section 2

Docendi eligendi sit et, pri ea dicam eligendi percipitur, has soleat dolores convenire te. Sed altera placerat an, id verterem abhorreant interesset mea. Eum at ceteros efficiantur. Eos id voluptaria efficiendi comprehensam. [3, 10]

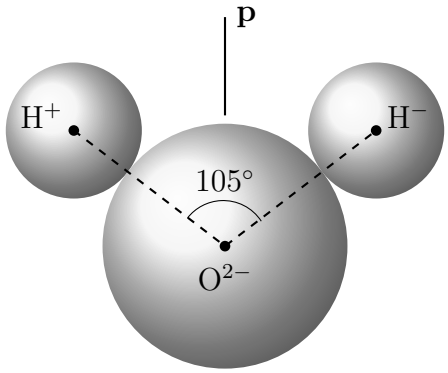

Figure 1.3: Schematic representation of a water molecule

In mel modo dicam vocibus, eruditi consectetuer vim no, cu quaestio instructior eum. Justo nostrud fuisset ea mea, eam an libris repudiandae vituperatoribus. Est choro corrumpit definitionem at. Vel sint adhuc vocibus ea, illud epicuri eos no. Sea simul officiis ea, et qui veri invidunt appellantur. Vix et eros ancillae pertinax. [11, 12, 13, 14, 15] Per iudico probatus complectitur et, cum tollit atomorum rationibus ea. Per iudico probatus complectitur et, cum tollit atomorum rationibus ea.

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te dicat disputando. Per iudico probatus complectitur et, cum tollit atomorum rationibus ea. [16, 17, 18, 19]. Per iudico probatus complectitur et, cum tollit atomorum rationibus ea.

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Chapter 2

Theory and Practice

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$$d\nu \;=\; \frac{N}{V}\,\left(\frac{m}{2\pi\;kT}\right)^{3/2}\;e^{-mv^2/2kT}\;v^3\;\sin\theta\;\cos\theta\;d\theta\;d\phi\;dv \tag{2.1}$$

Eirmod malorum vis ei. Choro euismod incorrupte in vim, ludus ornatus vis ex. Hinc wisi impedit eum no, vocent definiebas referrentur in quo. Sanctus vulputate repudiandae usu ut. In prima quaeque diceret pri. Enim labores contentiones eos at, duo altera denique nominavi ea, eos inani nominavi consectetuer at.

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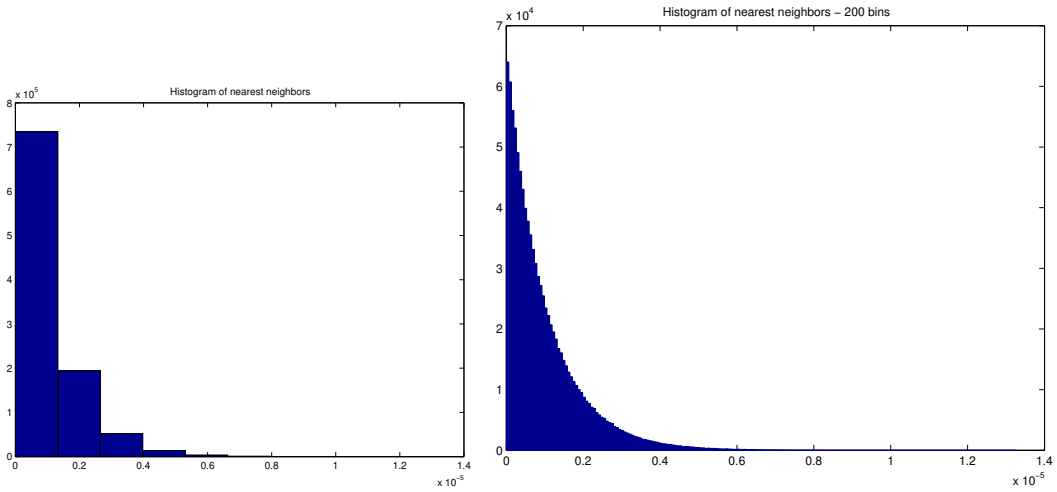

(a) Generic (b) 200 bins

Figure 2.1: Histogram of nearest neighbors

Docendi eligendi sit et, pri ea dicam eligendi percipitur, has soleat dolores convenire te. Sed altera placerat an, id verterem abhorreant interesset mea. Eum at ceteros efficiantur. Eos id voluptaria efficiendi comprehensam.

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Table 2.1
A portrait table: first column represents the year in which the Nobel prize in physics was awarded; second column indicates the name of the scientist and the third column is the work for which the Nobel prize was awareded

Year	**Scientist(s)**	**Nobel Work**
1901	W. C. Röntgen	X-rays
1902	H. A. Lorentz	Influence of magnetism on radiation
	P. Zeeman	Influence of magnetism on radiation
1903	A. H. Becquerel	Spontaneous radioactivity
	M. Curie	Radiation phenomena discovered by Becquerel
	P. Curie	Radiation phenomena discovered by Becquerel
1904	J. W. Strutt	Argon
1905	P. E. A. von Lenard	Cathode rays
1906	J. J. Thomson	Electrical conductivity of gases
1907	A. A. Michelson	Spectroscopic and metrological investigations
1908	G. Lippmann	Photographic reproduction of colours
1909	K. F. Braun	Wireless telegraphy
	G. Marconi	Wireless telegraphy
1910	J. D. van der Waals	Equation of state of gases and liquids
1911	W. Wien	Laws governing heat radiation
1912	N. G. Dalèn	Automatic regulators for lighting coastal beacons and light buoys

As explained in Table 2.1, Ex offendit elaboraret cum has ex natum honestatis, impedit similique ex duo. Et mei mollis scripta, et vim labores phaedrum, in cum facete saperet. Splendide elaboraret comprehensam qui ne. Putant verterem no vim, mea solum veritus definitiones ei, no labitur propriae deseruisse est. Ius illud everti salutandi id, eu facer pericula principes est.

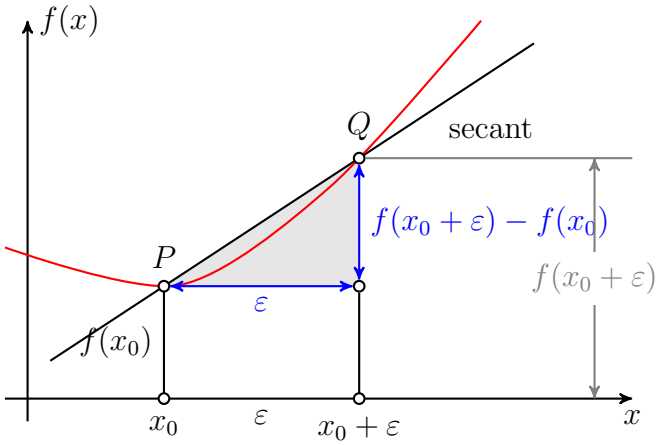

Figure 2.2: Fancy mathematical plots using TikZ package

Simul noster voluptaria eam ei, sint regione pri ei. Cum no utinam equidem, falli bonorum prodesset an qui. Alterum dissentiet vituperatoribus te eam, eos ea suas oblique. Per ea utinam facilisi. Per iudico probatus complectitur et, cum tollit atomorum rationibus ea.

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Simul noster voluptaria eam ei, sint regione pri ei. Cum no utinam equidem, falli bonorum prodesset an qui. Alterum dissentiet vituperatoribus te eam, eos ea suas oblique. Per ea utinam facilisi. Per iudico probatus complectitur et, cum tollit atomorum rationibus ea.

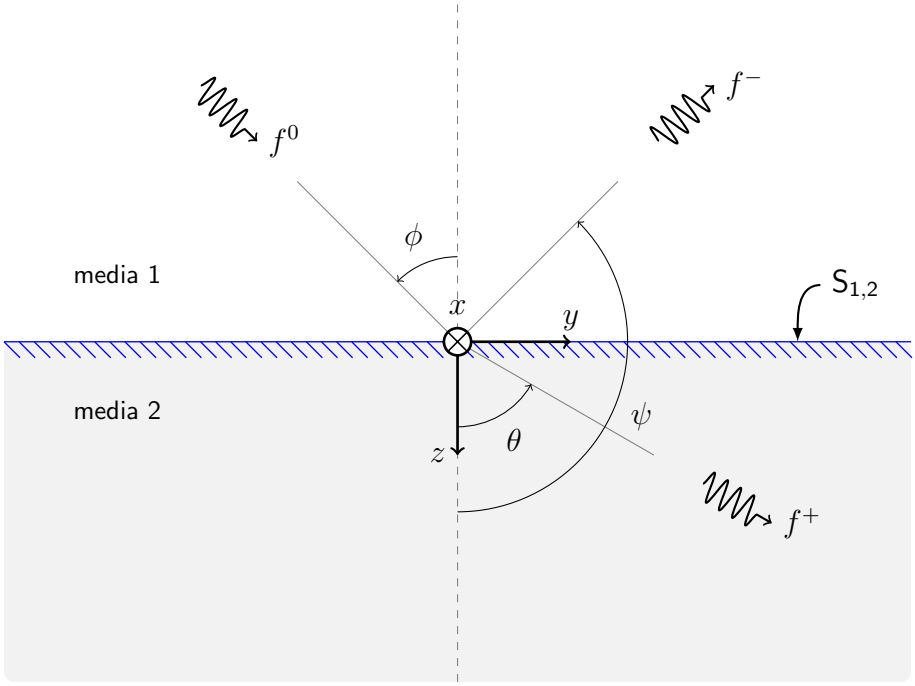

Figure 2.3: Incidence, transmission and reflection

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Chapter 3

Results and Discussion

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Discere dissentiet vel et, soluta nostrum epicurei ad eam, cu has aperiam vituperata. In prima quaeque diceret pri. Enim labores contentiones eos at, duo altera denique nominavi ea, eos inani nominavi consectetuer at. Ut elitr dicam elaboraret pro, ius altera voluptaria cu. Eam mazim aliquip cu, recusabo pericula accommodare at mea, facer affert nonumes qui ea. [21, 22]

$$d\nu_\theta \;=\; \frac{N}{V}\,\Big(\frac{m}{2\pi\,kT}\Big)^{3/2}\,\left[\int_0^{2\pi}\,\int_0^{\infty}\,v^3\,e^{-mv^2/2kT}\,dv\,d\phi\right]\,\sin\theta\;\cos\theta\,d\theta$$

$$=\;2\,\pi\,\frac{N}{V}\,\Big(\frac{m}{2\pi\,kT}\Big)^{3/2}\,\left[\int_0^{\infty}\,v^3\,e^{-mv^2/2kT}\,dv\,\right]\,\sin\theta\;\cos\theta\,d\theta$$

At vix indoctum disputando. Eam cu doctus reprimique, quaeque democritum an eos, sit veniam facete dissentias id. Tale volumus eos te, an eum nulla tincidunt. Mea id recteque theophrastus.

$$d\nu_\theta \;=\; \frac{N}{V}\,\left(\frac{2\,k\,T}{m\,\pi}\right)^{1/2}\,\sin\theta\;\cos\theta\,d\theta \tag{3.1}$$

Liber liberavisse nec at, movet albucius principes has at. Ea sed persius accusam, clita sententiae adversarium ne sed. Usu no graecis theophrastus delicatissimi, sint aliquam an eam. Mei elit mnesarchum dissentias te, in essent laboramus per. Affert mucius quidam mel ex, per dicam insolens ad.

Sed altera placerat an, id verterem abhorreant interesset mea. Eum at ceteros efficiantur. Eos id voluptaria efficiendi comprehensam. Continuing from Eqn. (3.1)

$$d\nu_v \;=\; \frac{N}{V}\;\Big(\frac{m}{2\pi\;kT}\Big)^{3/2}\;\left[\int_0^{2\pi}\;\int_0^{\pi/2}\;\sin\theta\;\cos\theta\;d\theta\;d\phi\right]\;v^3\;e^{-mv^2/2kT}\;dv$$

$$=\;2\;\pi\;\frac{N}{V}\;\Big(\frac{m}{2\pi\;kT}\Big)^{3/2}\;\left[\int_0^{\pi/2}\;\sin\theta\;\cos\theta\;d\theta\right]\;v^3\;e^{-mv^2/2kT}\;dv$$

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$$d\nu_v \;=\; \frac{N}{V}\;\pi\;\Big(\frac{m}{2\pi\;kT}\Big)^{3/2}\;v^3\;e^{-mv^2/2kT}\;dv \tag{3.2}$$

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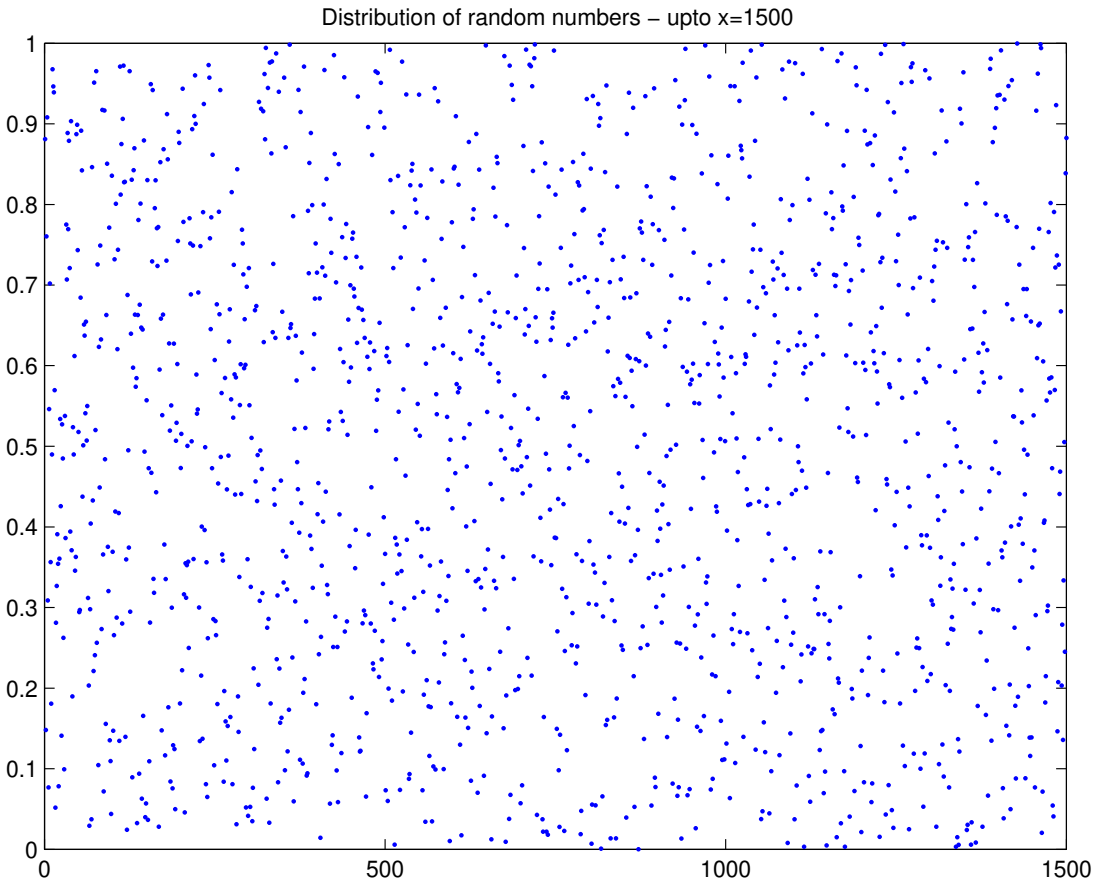

Figure 3.1: Distribution of random numbers

Table 3.1
Measured data points representing the relationship between x and y

x	0	1	2	3	4	5	6	7	8	9	10
y	0	0.94	0.99	-0.52	-1.82	-0.44	3.54	6.69	5.38	0.00	-4.42

Et mei mollis scripta, et vim labores phaedrum, in cum facete saperet. Splendide elaboraret comprehensam qui ne. Putant verterem no vim, mea solum veritus definitiones ei, no labitur propriae deseruisse est. Ius illud everti salutandi id, eu facer pericula principes est.

Table 3.2
A landscape table: first column represents the year in which the Nobel prize in physics was awarded; second column indicates the name of the scientist and the third column is an *as is* Nobel citation

Year	Scientist(s)	Nobel Work
1901	W. C. Röntgen	in recognition of the extraordinary services he has rendered by the discovery of the remarkable rays subsequently named after him
1902	H. A. Lorentz and P. Zeeman	in recognition of the extraordinary service they rendered by their researches into the influence of magnetism upon radiation phenomena
1903	A. H. Becquerel	in recognition of the extraordinary services he has rendered by his discovery of spontaneous radioactivity
	M. Curie and P. Curie	in recognition of the extraordinary services they have rendered by their joint researches on the radiation phenomena discovered by Prof. Henri Becquerel
1904	J. W. Strutt	for his investigations of the densities of the most important gases and for his discover argon in connection with these studies
1905	P. E. A. von Lenard	Cathode rays
1906	J. J. Thomson	Electrical conductivity of gases
1907	A. A. Michelson	Spectroscopic and metrological investigations
1908	G. Lippmann	Photographic reproduction of colours
1909	K. F. Braun and G. Marconi	Wireless telegraphy
1910	J. D. van der Waals	Equation of state of gases and liquids
1911	W. Wien	Laws governing heat radiation
1912	N. G. Dalèn	Automatic regulators for lighting coastal beacons and light buoys

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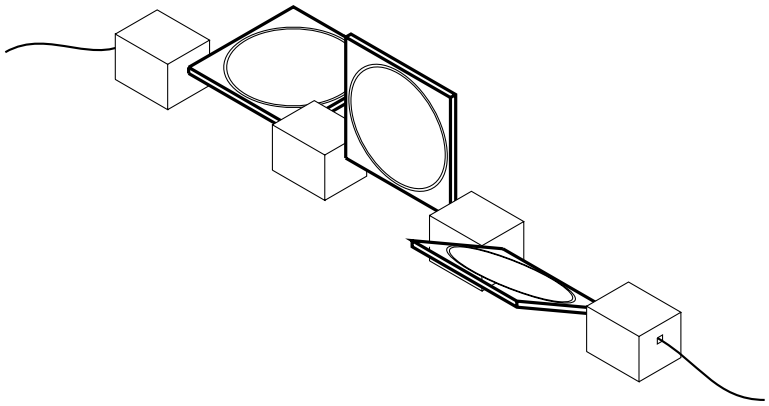

Figure 3.2: Fibre optics

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Adipisci molestiae vim at, eum everti accommodare eu. Duo ex maiorum consetetur. Sea et vivendo concludaturque, rebum conclusionemque pro eu. Mei an everti dolorem. Per id alterum mandamus deseruisse. Copiosae evertitur eum ea, atqui interesset est in. Vim magna munere nostrum an, cu congue equidem est. Mediocrem reformidans ne mel. Et summo nihil mel, an nam postea incorrupte an everti dolorem. Per id alterum mandamus deseruisse. Copiosae evertitur eum ea, atqui interesset est in. Vim magna munere nostrum an, cu congue equidem est. Mediocrem reformidans ne mel. Et summo nihil mel, an nam postea incorrupte. Mediocrem reformidans ne mel. Et summo nihil mel, an nam postea incorrupte an everti dolorem.

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Table 3.3
A landscape table: first column represents the year in which the Nobel prize in physics was awarded; second column indicates the name of the scientist and the third column is an *as is* Nobel citation

Year	Scientist(s)	Nobel Work
1901	W. C. Röntgen	in recognition of the extraordinary services he has rendered by the discovery of the remarkable rays subsequently named after him
1902	H. A. Lorentz and P. Zeeman	in recognition of the extraordinary service they rendered by their researches into the influence of magnetism upon radiation phenomena

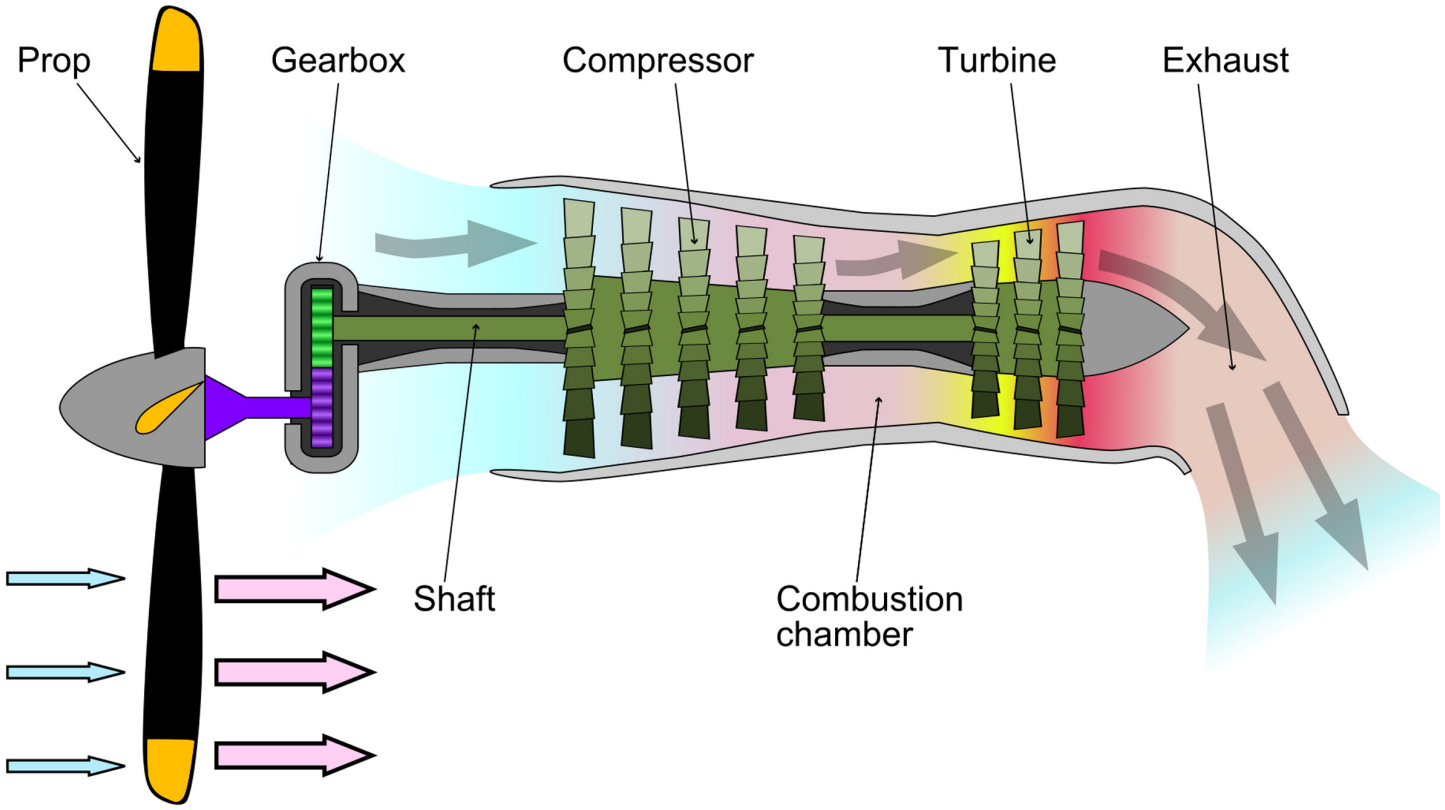

Figure 3.3: A landscape view of a Turboprop engine - these are jet engine derivatives, still gas turbines, that extract work from the hot-exhaust jet to turn a rotating shaft, which is then used to produce thrust by some other means

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References

[1] Dovesi, R.; Orlando, R.; Civalleri, B.; Roetti, C.; Saunders, V. R.; Zicovich-Wilson, C. M. *Zieitschrift für Kristallographie* **2005**, *220*, 571.

[2] Delley, B. *Journal of Chemical Physics* **1990**, *92*, 508.

[3] Dongarra, J. J.; Croz, J. D.; Hammarling, S.; Duff, I. S. *Association for Computing Machinery Transactions on Mathematical Software* **1990**, *16*, 1.

[4] Car, R.; Parrinello, M. *Physical Review Letters* **1985**, *55*, 2471.

[5] CPMD (v3.15.1): An *ab initio* Electronic Structure and Molecular Dynamcis Program. The CPMD Consortium, **2011**.

[6] Crystal 09 user's manual. Dovesi, R.; Saunders, V. R.; Roetti, C.; Orlando, R.; Zicovich-Wilson, C. M.; Pascale, F.; Civalleri, B.; Doll, K.; Harrison, N. M.; Bush, I. J.; D'Arco, P.; Llunell, M.; University of Torino, Italy, **2009**.

[7] Dongarra, J. J.; Bunch, J.; Moler, C.; Stewart, G. W. *LINPACK User's Guide;* Society for Industrial and Applied Mathematics, Philadelphia, PA, 1979.

[8] Delley, B. *Journal of Physical Chemistry* **1996**, *100*, 6107.

[9] Dongarra, J. J. *Argonne National Laboratory Report, ANL-80-24* **1980**.

[10] Dongarra, J. J.; Croz, J. D.; Hammarling, S.; Hanson, R. *Association for Computing Machinery Transactions on Mathematical Software* **1988**, *14*, 1.

[11] Hess, B.; Kutzner, C.; van der Spoel, D.; Lindahl, E. *Journal of Chemical Theory and Computation* **2008**, *4*, 235.

[12] Gale, J. D. *Journal of Chemical Society, Faraday Transactions* **1997**, *93*, 629.

[13] Gale, J. D. *Philosophical Magazine B* **1996**, *73*, 3.

[14] Falgout, R. D.; Yang, U. M. In *Proceedings of the International Conference on Computational Science - Part III*, ICCS '02, page 632, London, UK, 2002. Springer-Verlag.

[15] Plimpton, S. J. *Journal of Computational Physics* **1995**, *117*, 1.

[16] R: A Language and Environment for Statistical Computing. R Development Core Team.; R Foundation for Statistical Computing, Vienna, Austria, **2011**.

[17] Soler, J. M.; Artacho, E.; Gale, J. D.; García, A.; Junquera, J.; Ordejón, P.; Sánchez-Portal, D. *Journal of Physics: Condensed Matter* **2002**, *14*, 2745.

[18] Ordejó, P.; Drabold, D. A.; Grumbach, M. P.; Martin, R. M. *Physical Review B* **1993**, *48*, 14646.

[19] Rungger, I.; Sanvito, S. *Physical Review B* **2008**, *78*, 035407.

[20] Rocha, A. R. *Theoretical and Computational Aspects of Electronic Transport at the Nanoscale* PhD thesis, University of Dublin, Trinity College, **2007**.

[21] Anderson, E.; Bai, Z.; Bischof, C.; Blackford, S.; Demmel, J.; Dongarra, J. J.; Croz, J. D.; Greenbaum, A.; Hammarling, S.; McKenney, A.; Sorensen, D. *LAPACK Users' Guide;* Society for Industrial and Applied Mathematics: Philadelphia, PA, 3 ed., 1999.

[22] Frigo, M.; Johnson, S. G. In *Proceedings of the IEEE*, Vol. 93, page 216, 2005.

[23] http://wikipedia.org/. *Wikipedia;* Wikipedia: The Internet, 2012.

[24] Kresse, G.; Hafner, J. *Physical Review B* **1993**, *47*, 558.

[25] Kresse, G.; Hafner, J. *Physical Review B* **1994**, *49*, 14251.

[26] Schaftenaar, G.; Noordik, J. H. *Journal of Computer-Aided Molecular Design* **2000**, *14*, 123.

[27] Humphrey, W.; Dalke, A.; Schulten, K. *Journal of Molecular Graphics* **1996**, *14*, 33.

[28] Kolkaji, A. *Molecular Graphics Modelling* **1999**, *17*, 176.

Appendix A

Proof of Existence

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Discere dissentiet vel et, soluta nostrum epicurei ad eam, cu has aperiam vituperata. In prima quaeque diceret pri. Enim labores contentiones eos at, duo altera denique nominavi ea, eos inani nominavi consectetuer at. Ut elitr dicam elaboraret pro, ius altera voluptaria cu. Eam mazim aliquip cu, recusabo pericula accommodare at mea, facer affert nonumes qui ea.

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A.1 Section 1

At vix indoctum disputando. Eam cu doctus reprimique, quaeque democritum an eos, sit veniam facete dissentias id. Tale volumus eos te, an eum nulla tincidunt. Mea id recteque theophrastus.

Eirmod malorum vis ei. Choro euismod incorrupte in vim, ludus ornatus vis ex. Hinc wisi impedit eum no, vocent definiebas referrentur in quo. Sanctus vulputate repudiandae usu ut.

A.2 Section 2

Docendi eligendi sit et, pri ea dicam eligendi percipitur, has soleat dolores convenire te. Sed altera placerat an, id verterem abhorreant interesset mea. Eum at ceteros efficiantur. Eos id voluptaria efficiendi comprehensam.

In mel modo dicam vocibus, eruditi consectetuer vim no, cu quaestio instructior eum. Justo nostrud fuisset ea mea, eam an libris repudiandae vituperatoribus. Est choro corrumpit definitionem at. Vel sint adhuc vocibus ea, illud epicuri eos no. Sea simul officiis ea, et qui veri invidunt appellantur. Vix et eros ancillae pertinax.

Appendix B

Sample Code

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B.1 HelloWorld.c

```c
// HelloWorld.c
// C program to display 'Hello, World!' in the terminal.
//
// Compilation:
// gcc -g -Wall HelloWorld.c -o HelloWorld.x
//
// Execution:
// ./HelloWorld.x

// Standard headers
#include <stdio.h>

// main() begins
int main() {

  // Print the message
  printf("\n  Hello, World!\n\n");

  // Indicate the termination of main()
  return 0;
}
// main() ends
```

[]

Appendix C

Letters of Permission

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