

DAMODAR RAJBHANDARI, B.Sc.

Aspirant Physicist, Scientific Programmer & Blogger



📍 Fulbari, Pokhara ✉ Pokhara D.P.O., 33700 Nepal @ dphysicslog@gmail.com ☎ +977-9818382477
🌐 physicslog.com 📄 researchgate.net/profile/Damodar_Rajbhandari3 in linkedin.com/in/damicristi7
🌐 damodarrajbhandari.com.np 🏠 github.com/Damicristi 🆔 orcid.org/0000-0002-6954-9830

PROJECTS

Researcher & Scientific Programmer

An Open Source for Causal Dynamical Triangulations (CDT) Without Preferred Foliation in (1+1)-Dimensions with Elementary Expositions

📅 Aug 2017 - July 2018 📍 St. Xavier's College, Nepal

Supervisors: Prof. Dr. Udayaraj Khanal & Dr. Jonah Maxwell Miller

- This is my under-graduate senior thesis.
- I have developed a new software toolkit for CDT without preferred foliation which is freely available under the GNU public license and contributed to the open source community.
- I started this project with an ambition of rewriting the (1+1) dimensional CDT without preferred foliation code from scratch. This code will be further developed in near future to prove our hypothesis that geodesic distance will provide a meaning improvement to "jumping distance" used by spectral and Hausdorff dimension calculations, and short scale dimension reduction. This could be a tool for better understanding renormalization group flow in CDT.

Non-perturbative Quantum Gravity Numerical Simulation

Sum Over Histories Line of Research

Reference:
<https://cdt.physicslog.com>

Researcher & Scientific Programmer

A Short Visit to Ising's 2D Model

📅 Feb 2017 📍 St. Xavier's College, Nepal

Supervisors: Dr. Jonah Maxwell Miller

- I have implemented the Ising 2D model in python v3.5. with Object Oriented approach. And I consider, this is my first simulation project. In this work, my main contribution is the code optimization.
- I finished this simulation in the sense that I learned some basics of Monte-Carlo Simulation and achieved results that were comparable to Onsager's solution. After getting the data from simulation, I have presented all my results in a report "A short visit on Ising 2D model.
- I have also presented the poster of this work in "International Conference on Physics of Space and Materials (ICPSM 2017)".
- This is actually my minor projects of CDT because in CDT, we convert our quantum field problem into statistical problem especially related to Ising model.

Spontaneous Magnetization Numerical Simulation

Binder Cumulant Monte-Carlo Simulation

Metropolis-Hastings Algorithm Code Optimization

Reference:
<https://projects.physicslog.com/Ising-Model-in-2D/>

KARMA PHILOSOPHY

Invest your time in such a way that you won't feel you're wasting your time when you relax.

📈 Research Gate Score: **1.01**
I believe my interests will furnish my scientific reputation.

INTERESTS

Quantum Gravity Astrophysics
Gravitation Quantum Cosmology
Causal Dynamical Triangulations
Scientific Software Development

EDUCATION

Four years of B.Sc. in Physics

St. Xavier's College

📅 2014 - 2018 📍 Kathmandu, Nepal

- Affiliated to Tribhuvan University
- Secured 73.65% in an aggregate of B.Sc. in Physics
- Secured 82.4% in the fourth (final) year

PROGRAMMING SKILLS

Python \LaTeX Matlab C++
Monte-Carlo Simulation R
Machine Learning Bash
Object Oriented Design

SOFTWARE EXPERTISE

Linux Anaconda Package Manager
git Sublime text-3 Kile Texmaker
Lyx emacs Matlab Geogebra
Eclipse QtiPlot gnuplot Inkscape
R studio Office SPSS

Template Designer

LaTeX Template for the Preparation of Bachelor's Project Proposal under Tribhuvan University Formatting.

📅 Oct 2017

📍 St. Xavier's College, Nepal

- I have made the template much clearer than the one which we can find in overleaf.

LaTeX Template

Report Format

Tribhuvan University

Reference:

https://projects.physicslog.com/SXC_project_proposal/

Programmer

Optimizing the Equation Solver Code via Fixed Point Iteration Method

📅 Dec 2016

📍 St. Xavier's College, Nepal

- I have developed an optimized version of code for fixed point iteration method in Matlab.

Code Optimization

Equation solver

Reference:

<https://projects.physicslog.com/Fixed-Point-Iteration-Method/>

Perimeter of an Ellipse

Calculator for Approximate Perimeter of Ellipse by different Mathematician

📅 Feb 2015

📍 St. Xavier's College, Nepal

- I have developed a new method for calculating the approximate perimeter of an ellipse.

Reference:

<https://poe.physicslog.com>

SCHOLARLY WORKS

📄 Articles

- Rajbhandari, Damodar (2016a). "A Binomial theorem to derive the Taylor expansion in one variable". In: *The Winnower*. URL <https://thewinnower.com/papers/5453-a-binomial-theorem-to-derive-the-taylor-expansion-in-one-variable>.

✍️ Un-published articles

- Rajbhandari, Damodar (2017e). "Detailed Derivation of 1+1 Dimensional Causal Dynamical Triangulations without Preferred Foliation". ResearchGate DOI: <http://dx.doi.org/10.13140/RG.2.2.21106.35521>.
- (2016b). "An introduction to F-notation and the prove of the Cartesian product of natural number is countably infinite". URL <http://vixra.org/abs/1611.0281>.
- (2016f). "Logical treatment for an oscillatory sequence 1, 2, 3, 4, 3, 2, 1, 2, ... to find any term and a computer program to assist the operation". URL <http://vixra.org/abs/1606.0034>.
- (2016g). "The premature state of "Topology" and "Graph Theory" nourished by "Seven bridges of Königsberg problem"". URL <http://vixra.org/abs/1609.0113>.

LANGUAGES

Nepali

English

Hindi

OTHERS SKILLS

Public Speaking

Poetry

Footballer

COMMUNITY ACTIVITIES

Certification of Participation- First Nepal Winter School in AI

By NAAMII (NepAI Applied Mathematics and Informatics Institute for Research)

📅 Dec 20-30, 2018

📍 Kathmandu, Nepal

Certification of Participation- Workshop on Open Source Programming Language "R"

By Institute of Information & Technology Nepal

📅 Dec 15, 2017

📍 Kathmandu, Nepal

Certification of Poster Presentation on "A Short Visit to Ising's 2D Model"- International Conference on Physics of Space and Materials (ICPSM 2017)

By St. Xavier's College

📅 Sep 2-3, 2017

📍 Kathmandu, Nepal

Token of Love- Tutorial Session on "A Short Introduction to LaTeX and its importance"

At St. Xavier's College

📅 July, 2017

📍 Kathmandu, Nepal

Certification of Participation- National Workshop on New Research Trends in Physics

By St. Xavier's College

📅 Sep, 2016

📍 Kathmandu, Nepal

Certification of Participation- School on Astronomy and Space Science

By B.P. Koirala Memorial Planetarium, Observatory and Science Museum Development Board, Government of Nepal

📅 Jun, 2016

📍 Kathmandu, Nepal

Conference Proceedings & Posters

- Rajbhandari, Damodar (2017b). "A short visit to Ising's 2D model". In: *International Conference on Physics of Space and Materials (ICPSM 2017)*. URL <https://doi.org/10.6084/m9.figshare.5369026.v1>.

Reports

- Rajbhandari, Damodar (2018b). *An Open Source for Causal Dynamical Triangulations Without Preferred Foliation in (1+1)-Dimensions with Elementary Expositions*. Undergraduate senior thesis, Tribhuvan University. URL <https://cdt.physicslog.com/#code-documentation>.
- – (2017c). *A short visit to Ising's 2D model*. URL <https://doi.org/10.6084/m9.figshare.5143543.v1>. St. Xavier's College, Nepal.

TALKS

- Rajbhandari, Damodar (2018a). *An Open Source for Causal Dynamical Triangulations (CDT) Without Preferred Foliation in (1+1)-Dimensions with Elementary Expositions*. Research gate DOI: 10.13140/RG.2.2.17235.22563.
- – (2018c). *Quantum Gravity on a Computer: An introduction to (1+1) dimensional Causal Dynamical Triangulations without preferred foliation*. URL <https://projects.physicslog.com/cdt#presentation>. PRI Science Discussion Series, Episode 24.
- – (2017a). *A short introduction to \LaTeX and its importance*. URL <https://doi.org/10.6084/m9.figshare.5217613.v1>.
- – (2016d). *Introduction to Fixed Point Iteration Method and its application*. URL <https://doi.org/10.6084/m9.figshare.4285682.v1>.

CODE REPOSITORIES

- Rajbhandari, Damodar (2017 –). *An open source code for Causal Dynamical Triangulations without preferred foliation in (1+1)- dimensions*. URL <https://github.com/Damicristi/cdt-qg-2D>.
- – (2017d). *Beamer-like power-point template*. URL <https://github.com/Damicristi/Presentation-on-Reciprocal-Lattice>.
- – (2017f). *\LaTeX template for the preparation of bachelor's project proposal under Tribhuvan university formatting*. URL https://github.com/Damicristi/SXC_project_proposal.
- – (2016c). *Fixed point iteration method implementation*. URL <https://github.com/Damicristi/Fixed-Point-Iteration-Method>.
- – (2016e). *Ising 2D model simulator*. URL <https://github.com/Damicristi/Ising-Model-in-2D>.

REFERENCES


Prof. Dr. Udayaraj Khanal (Undergraduate Thesis Supervisor)

@ khanalu@yahoo.com

 Tribhuvan University, P.O. Box 44613, Kathmandu, Nepal

Dr. Jonah Maxwell Miller (Undergraduate Thesis Supervisor)

@ jonah.maxwell.miller@gmail.com

 Los Alamos National Laboratory, MS-B214, P.O. Box 1663, Los Alamos, NM, 87545, USA

Mr. Drabindra Pandit (HOD of Physics)

@ pandit_drab@yahoo.com

 St. Xavier's College, P.O. Box 7437, Kathmandu, Nepal

ORGANIZATIONS

Active Member

Physics Research Initiative (PRI)

 2019–  Pokhara, Nepal

Reference:

<https://pri.org.np>

Editor

Journal of St. Xavier's Physics Council

 2017 – 2018  Kathmandu, Nepal

- I was an active editorial member for the year (2017 – 2018) in the "Journal of St. Xavier's Physics Council".
- This journal belongs to the category called as "Post-Publication Peer Review Journal". Also, it is an overlay journal on viXra.

Reference:

<http://www.sxpc.ga/journal/>

Editor


New Dimension Magazine

 Jan 2017 – Apr 2017  Kathmandu, Nepal

- This magazine was a departmental magazine at St. Xavier's College.

IT Officer


St. Xavier's Physics Council

 2016 – 2017  Kathmandu, Nepal

- During the council, my job is to maintain the sxpc.ga site and other IT related works.

Football Player U-14

All Nepal Football Association (ANFA), Kaski

 2008 – 2011  Pokhara, Nepal

- Being in the club helped me to be a social and friendly person
- Praised as Best Player and Man of the Match in many tournaments
- To watch my Football skills, please go to damodarrajbhandari.com.np/#hobbies