WILEAM YONATAN PHAN

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EDUCATION

Master of Science (MS) — August 2016 to December 2021
Department of Physics & Astronomy,
College of Arts and Sciences,
University of Tennessee, Knoxville
Knoxville, Tennessee, United States of America

- Physics major, with concentration in condensed matter physics
- Thesis: "Accelerating Dynamical Density Response Code on Summit and Its Application for Computing the Density Response Function of Vanadium Sesquioxide"
  https://trace.tennessee.edu/utk_gradthes/6327/
  Advisor: Prof. A. G. Eguiluz (*University of Tennessee, Knoxville*)

Sarjana Sains (S.Si.) – equivalent to Bachelor of Science — July 2009 to May 2014
Departemen Fisika, Fakultas Matematika dan Ilmu
Pengetahuan Alam, Universitas Indonesia
Depok, Jawa Barat, Indonesia

- Physics major, with concentration in condensed matter physics
- Thesis: "Theoretical Study on the Effects of Substrate on the Optical Conductivity of Graphene"
  http://lib.ui.ac.id/detail?id=20414017&lokasi=lokal
  Co-advisors: Dr. M. A. Majidi (*Universitas Indonesia*) and Prof. A. Rusydi (*National University of Singapore*)

INTERESTS

- High performance computing
- Accelerated computing
- Embedded systems
- Bare-metal virtualization
- Continuous integration
- Numerical algorithms
- Mathematics of arrays
- Dense linear algebra
- Compiler technology
- Computational condensed-matter physics

LANGUAGE QUALIFICATIONS

- Human languages:
  - English (fluent)
  - Bahasa Indonesia / Indonesian (native language)
- Programming languages:
  - FORTRAN (66/77)
  - Modern Fortran (90/95/03/08/18/23)
  - Python
  - C
  - C++
  - Bash shell scripting
  - LaTeX
  - MathWorks MATLAB
  - Wolfram Mathematica
  - HTML
  - JavaScript
  - Ruby
  - Perl
- Programming APIs:
  - MPI
  - OpenMP
  - OpenACC
  - CUDA C/C++
  - CUDA Fortran
  - HIP/ROCm
  - DPC++/SYCL

PROFESSIONAL MEMBERSHIPS

- American Physical Society (APS)

WORK EXPERIENCE

Research Software Engineer I — June 2022 to present

Department of Computer Science, George R. Brown School of Engineering, Rice University
Houston, Texas, United States of America

- Member of development team for HPCToolkit profiling suite, part of Exascale Computing Project (ECP)
- Lead application engagement activities to collaborate with ECP application codes
- Collect feedback on HPCToolkit usage and from ECP application teams
- Serve as project coordinator for the HPCToolkit project within ECP for Department of Energy (DOE) open science laboratories and maintain the HPCToolkit installation at DOE supercomputer sites
- Contribute to the research and development of HPCToolkit profiling suite for GPU-accelerated applications

Research Software Engineer — March 2022 to present

Sourcery Institute
Oakland, California, United States of America

- Part-time, independent contract work
- Isolated Fortran 2018/2023 bugs in GFortran compiler and generated reproducer codes for bug reports
- Wrote Fortran 2018 standard compliance tests

Scientific Computing Software Engineer (CSE-2) — July 2021 to October 2021

Center for Computational Sciences and Engineering, Computational Research Division,
Lawrence Berkeley National Laboratory
Berkeley, California, United States of America

- Member of Adaptive Mesh Refinement for Exascale (AMReX) project, part of Exascale Computing Project (ECP)
- Ported several code components from Fortran to C++ with GPU support
- Developed unit tests, which were executed on Gigan (CCSE) and Spock (OLCF)
- Contributed to user documentation

Graduate Research Assistant — August 2020 to July 2021

Department of Physics & Astronomy, College of Arts and Sciences, University of Tennessee, Knoxville
Knoxville, Tennessee, United States of America

- Developed and ported the Eguiluz research group EXCITING-PLUS density response code to use NVIDIA graphic processing units (GPUs), using OpenACC and GPU libraries (MAGMA), targeting the Summit supercomputer at Oak Ridge Leadership Computing Facility (OLCF)
- Participated in the 2020 OLCF GPU Hackathon (https://www.olcf.ornl.gov/2020-olcf-gpu-hackathon/) as member of team EECM
- Performed calculations with the ported code on Summit (OLCF) and Cori-GPU (NERSC)

Graduate Teaching Assistant — August 2016 to May 2020

Department of Physics & Astronomy, College of Arts and Sciences, University of Tennessee, Knoxville
Knoxville, Tennessee, United States of America

- Taught physics laboratory sessions (both traditional and hybrid studio methods) for the following courses
  - PHYS 221 Elements of Physics I (Fall 2017, Fall 2018, Spring 2019)
  - PHYS 222 Elements of Physics II (Spring 2017, Spring 2018, Fall 2019)
  - PHYS 231 Fundamentals of Physics I: Electricity and Magnetism (Fall 2016, Spring 2018)
- Graded for the following course:
  - PHYS 514 Problems in Theoretical Physics II (Spring 2020)

Teaching Assistant — January 2011 to December 2015

Departemen Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Indonesia
Depok. Jawa Barat, Indonesia

- Appointed for the following courses:
  - FSK 20236 Electromagnetic Fields 1 (January 2011 to June 2013)
  - SCFI 603611 Solid State Physics 1 (August 2014 to December 2015)
  - SCFI 604021 Computational Physics 2 (August 2015 to December 2015)
- Held tutorials, proctored exams, and graded homework & exams

PUBLICATIONS

- Wileam Y. Phan, ""Towards Exascale Computing: Recent Trends in High-Performance Computing (HPC)", invited talk delivered in Indonesian at Departemen Fisika Universitas Indonesia, https://wyphan.github.io/logfile/2022/02/09/fisika-ui-talk.html
- Lenore M. Mullin and Wileam Y. Phan, "A Transformational Approach to Scientific Software: the Mathematics of Arrays (MoA) Fast Fourier Transform (FFT) with OpenACC", invited talk at the OpenACC Summit 2021, https://www.openacc.org/events/openacc-summit-2021
- MA Majidi, R Kusumaatmadja, AD Fauzi, WY Phan, A Taufik, R Saleh, and A Rusydi, "Theoretical Exploration of Optical Response of Fe_3O_4-reduced Graphene Oxide Nanoparticle System within Dynamical Mean-Field Theory", published in *IOP Conference Series: Materials Science & Engineering* **188**, 012055 (2017), doi: 10.1088/1757-899x/188/1/012055
- MA Majidi, WY Phan, and A Rusydi, "Investigation of the Effects of the Graphene-Substrate Hybridization on the Optical Conductivity of Graphene", published in *AIP Conference Proceedings* **1729**, 020016 (2016), doi:10.1063/1.4946919
- MA Majidi, MA Naradipa, WY Phan, A Syahroni, and A Rusydi, "Development of Tight-binding Based GW Algorithm and Its Computational Implementation for Graphene", published in *AIP Conference Proceedings* **1729**, 020013 (2016), doi: 10.1063/1.4946916

TRAINING AND WORKSHOPS

- Coding for GPUs Using Standard Fortran Webinar (May 13, 2022)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/coding-for-gpus-using-standard-fortran/
- Coding for GPUs Using Standard C++ Webinar (April 7, 2022)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/coding-for-gpus-using-standard-c/
- 8th BerkeleyGW Tutorial Workshop (January 10-12, 2022)
  Lawrence Berkeley National Laboratory (LBL) – remote participation
  https://workshop.berkeleygw.org/
- Using Perlmutter Training Workshop (January 5-7, 2022)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/using-perlmutter-training-jan2022/
- ECP CMake Training Workshop (August 23-26, 2021)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/ecp-cmake-training-aug-2021/
- Introduction to CI at NERSC Training (July 7, 2021)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/introduction-to-ci-at-nersc-july-7-2021/
- Perlmutter Introduction Training (June 2, 2021)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/perlmutter-introduction-june-2021/
- HIP Training Workshop (May 24-26, 2021)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/2021hip
- Automated Fortran-C++ Bindings for Large Scale Scientific Applications (May 12, 2021)
  Exascale Computing Project – remote participation
  https://www.exascaleproject.org/event/fortran-cpp-bindings/
- AMD EPYC Advanced User Training on Expanse (April 21, 2021)
  San Diego Supercomputing Center (*SDSC*) – remote participation through NSF XSEDE
  https://www.xsede.org/web/xup/course-calendar/-/training-user/class/2311
- Using HPCToolkit to Measure and Analyze the Performance of GPU-accelerated Applications Tutorial (March 29 & April 2, 2021)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/hpctoolkit-for-gpu-tutorial-mar-apr-2021
- Introduction to Ookami Webinar (March 3, 2021)
  Institute for Advanced Computational Science, Stony Brook University – remote participation

- Good Practices for Research Software Documentation Webinar (February 10, 2021)
  Exascale Computing Project – remote participation
  https://ideas-productivity.org/events/hpc-best-practices-webinars/#webinar049
- Extreme-scale Scientific Software Stack (E4S) Webinar (January 13, 2021)
  Exascale Computing Project – remote participation
  https://www.exascaleproject.org/event/e4s-210113/
- Totalview Tutorial (December 9, 2020)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/totalview-tutorial-december-9-2020/
- 2020 OLCF GPU Hackathon (October 19 & 26-28, 2020)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/2020-olcf-gpu-hackathon/
- CUDA Training Series (January - September 2020; July 2021 - present)
  Oak Ridge Leadership Computing Facility (OLCF) – remote and on-site participation
  https://www.olcf.ornl.gov/cuda-training-series/
- Testing and Code Review Practices in Research Software Development Webinar (September 9, 2020)
  Exascale Computing Project – remote participation
  https://www.exascaleproject.org/event/testing-and-code-review/
- TAU Performance Analysis Training (July 28, 2020)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/tau-performance-analysis-training/
- Arm Debugging and Profiling Tools Tutorial (July 16, 2020)
  National Energy Research Scientific Computing Center (NERSC) – remote participation
  https://www.nersc.gov/users/training/events/arm-debugging-and-profiling-tools-tutorial-june-25-2020/
- OpenACC Training Series (April - June 2020, once a month)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/openacc-training-series/
- NVIDIA Profiling Tools – Nsight Compute Training (March 10, 2020)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/nvidia-profiling-tools-nsight-compute/
- NVIDIA Profiling Tools – Nsight Systems Training (March 9, 2020)
  Oak Ridge Leadership Computing Facility (OLCF) – remote participation
  https://www.olcf.ornl.gov/calendar/nvidia-profiling-tools-nsight-systems/
- Programming for Advanced Architectures on Stampede2 Training (October 31, 2018)
  Texas Advanced Computing Center (TACC) – remote participation through NSF XSEDE
  https://portal.xsede.org/course-calendar/-/training-user/class/880
- Workshop Klaster Komputer 2013 (December 11-13, 2013)
  Lembaga Ilmu Pengetahuan Indonesia (LIPI), Bandung, Jawa Barat, Indonesia
  http://situs.opi.lipi.go.id/wkk2013/