

## List of Projects for OIS 2024

Applicants may take reference to this list for possible destinations and projects for OIS. The final list of projects available for summer 2024 is subject to change. It will depend on supervisor's availability and travel restrictions by the host institution/country.

Institution:	Ben-Gurion University Department of Physics
Location:	Israel
Supervisor:	Naamneh, Muntaser <a href="https://physics.bgu.ac.il/people/374/">https://physics.bgu.ac.il/people/374/</a>
Suggested project(s):	TBC
Remarks:	For PHY students only

Institution:	Central Michigan University Department of Physics
Location:	United States
Supervisor:	Prof. Valeri Petkov <a href="http://people.cst.cmich.edu/petko1vg/">http://people.cst.cmich.edu/petko1vg/</a>
Suggested project(s):	TBC
Remarks:	For PHY students only

Institution:	Durham University
Location:	United Kingdom
Supervisor:	Prof. Philip Dyer <a href="https://www.durham.ac.uk/staff/p-w-dyer/">https://www.durham.ac.uk/staff/p-w-dyer/</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Synthesis and coordination chemistry of organophosphorus compounds and their applications in homogeneous catalysis</li> </ul>
Remarks:	New partner for 2024 For CHEM students only

Institution:	National Agriculture and Food Research Organization (NARO)
Location:	Japan
Supervisor:	Dr. Heesoo Eun <a href="https://researchmap.jp/read0144256/?lang=english">https://researchmap.jp/read0144256/?lang=english</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Analytical Method Development for PFAS and pesticides</li> </ul>
Remarks:	For CHEM students only. Knowledge in Japanese or Korean is a plus.

Institution:	Nanyang Technological University
Location:	Singapore
Supervisor:	Prof. Nicholas Privault <a href="https://personal.ntu.edu.sg/nprivault/index.html">https://personal.ntu.edu.sg/nprivault/index.html</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Efficient Monte Carlo methods for Markovian growth-collapse processes</li> </ul>

Remarks:	New partner for 2024 For MA students only. Requires basic knowledge of e.g. R or Python programming.
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Institution:	National University of Singapore
Location:	Singapore
Supervisor:	Prof. Ji Hui <a href="https://blog.nus.edu.sg/matjh/">https://blog.nus.edu.sg/matjh/</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Unsupervised Deep Learning for Medical Imaging</li> </ul>
Past project(s):	<ul style="list-style-type: none"> <li>Apply ISTA-net on CT image</li> </ul>
Remarks:	For MA students with programming background in Python and Pytorch.

Institution:	Paul Scherrer Institute
Location:	Switzerland
Supervisor:	Prof. Milan Radovic <a href="https://www.psi.ch/en/lx/people/milan-radovic">https://www.psi.ch/en/lx/people/milan-radovic</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Engineering Mott Physics in Transition Metal Oxides</li> </ul>
Past project(s):	<ul style="list-style-type: none"> <li>Spectroscopy Study on Novel Quantum Materials</li> </ul>
Remarks:	For PHY students only

Institution:	Polytech Montpellier
Location:	France
Supervisor:	Depending on student's research interest
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>Spectroscopic data analysis on single-walled carbon nanotube (SWNT)</li> </ul>
Remarks:	For all students

Institution:	Sorbonne University
Location:	France
Supervisor:	Prof. Cristinel Mardare <a href="https://sciences.sorbonne-universite.fr/">https://sciences.sorbonne-universite.fr/</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Optimal control of an ODE to launch a rocket</li> </ul>
Remarks:	New partner for 2024 For MA students only

Institution:	The Institute of Mathematical Statistics
Location:	Japan
Supervisor:	Dr Stephen Wu <a href="http://daweb.ism.ac.jp/~stewu/">http://daweb.ism.ac.jp/~stewu/</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Statistical machine learning applications and software development in science and engineering problems</li> </ul>
Remarks:	New partner for 2024 For MA students only. With programming experience preferred, especially Python.

Institution:	The National Institute of Advanced Industrial Science and Technology (AIST)
Location:	Japan
Supervisor:	Dr. Nobuyoshi Yamashita <a href="https://www.aist.go.jp/aist_e/dept/en_denvene.html">https://www.aist.go.jp/aist_e/dept/en_denvene.html</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>Environmental analytical chemistry of PFAS, per- and polyfluorinated alkyl substances</li> </ul>
Remarks:	For CHEM students with training of introduction of instrumental analysis using LCMS or GCMS. Not only text but also real operation.

Institution:	TU Wien Institute of Solid State Physics, Faculty for Physics
Location:	Austria
Supervisor:	Prof. Marta Gibert <a href="https://www.ifp.tuwien.ac.at/toppage">https://www.ifp.tuwien.ac.at/toppage</a> <a href="https://tiss.tuwien.ac.at/adressbuch/adressbuch/person/352138">https://tiss.tuwien.ac.at/adressbuch/adressbuch/person/352138</a>
Suggested project(s):	TBC
Remarks:	For PHY students only

Institution:	University of Alberta
Location:	Canada
Supervisor:	Dr Zhan Shu <a href="https://apps.ualberta.ca/directory/person/zshu1">https://apps.ualberta.ca/directory/person/zshu1</a>
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>Mathematical model of human immune system response to COVID-19</li> </ul>
Remarks:	For MA students only

Institution:	University of Bologna
Location:	Italy
Supervisor:	Prof. Elena Piccolomini <a href="https://www.unibo.it/sitoweb/elena.loli/en">https://www.unibo.it/sitoweb/elena.loli/en</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• Inverse problems in imaging by data-driven methods</li> </ul>
Remarks:	New partner for 2024 For MA students only. Requires experience with python, numerical optimization and neural networks.

Institution:	University System of Taiwan (includes National Central University, National Yang Ming Chiao Tung University, National Tsing Hua University and National Chengchi University)
Location:	Taiwan
Supervisor:	Depending on student's research interest
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>• Perform histogram analysis for cisterns in neonatal rats after hypoxic ischemia</li> </ul>
Remarks:	For all students

Institution:	University of Cambridge
Location:	United Kingdom
Supervisor:	Prof. Carola-Bibiane Schönlieb <a href="http://www.damtp.cam.ac.uk/person/cbs31">http://www.damtp.cam.ac.uk/person/cbs31</a>
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>• A Hybrid Energy Model for Vessel Skeleton Extraction</li> <li>• HSI classification</li> <li>• Neural ODE</li> <li>• Improve the performance of activation function in Implicit Neural Representation</li> </ul>
Remarks:	For MA students only

Institution:	University of Greenwich
Location:	United Kingdom
Supervisor:	Prof. Choi-Hong Lai <a href="https://www.gre.ac.uk/people/rep/las/choi-hong-lai">https://www.gre.ac.uk/people/rep/las/choi-hong-lai</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• Computational medical biology – mechanosensation in cardio myocytes</li> </ul>
Past project(s):	<ul style="list-style-type: none"> <li>• Population models for understanding Covid19 pandemic</li> <li>• Some parameter estimation problems in Euler-Bernoulli beam</li> </ul>
Remarks:	For MA or PHY students.  Require Python programming or Matlab coding. Good grades in numerical analysis or scientific computing.  Highly motivated in independent reading and research.

Institution:	University of Liverpool
Location:	United Kingdom
Supervisor:	Prof. Ke Chen <a href="https://www.liverpool.ac.uk/mathematical-sciences/staff/ke-chen/">https://www.liverpool.ac.uk/mathematical-sciences/staff/ke-chen/</a>
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>• Deep Learning: Image Segmentation</li> <li>• Medical Image Segmentation via General U-Net</li> </ul>
Remarks:	For MA students only

Institution:	University of New South Wales School of Chemical Engineering
Location:	Australia
Supervisor:	Dr. Nicholas Bedford <a href="https://bedfordresearchgroup.com/">https://bedfordresearchgroup.com/</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• Selective electro-processing of biomass for sustainable fuels and chemicals</li> </ul>
Past project(s):	<ul style="list-style-type: none"> <li>• Electrochemistry</li> </ul>
Remarks:	For PHY students only

Institution:	University of Southampton
Location:	United Kingdom
Supervisor:	Dr Xiaohao Cai <a href="https://www.ecs.soton.ac.uk/people/xc1f20">https://www.ecs.soton.ac.uk/people/xc1f20</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• Applied Mathematics in Computer Vision</li> </ul>
Remarks:	For MA students only

Institution:	University of Surrey
Location:	United Kingdom
Supervisor:	Dr Wei Zhang <a href="https://www.surrey.ac.uk/people/wei-zhang">https://www.surrey.ac.uk/people/wei-zhang</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• High Performance and Stable Perovskite Solar Cells</li> </ul>
Remarks:	For CHEM students only. Require CGPA3.0 or above.

Institution:	University of Tennessee
Location:	United States
Supervisor:	Dr. Kwai Wong <a href="https://mabe.utk.edu/people/kwai-l-wong/">https://mabe.utk.edu/people/kwai-l-wong/</a>
Suggested project(s):	Depending on student's research interest
Past project(s):	<ul style="list-style-type: none"> <li>• Computation Sciences</li> <li>• RC Autonomous Vehicle Project</li> <li>• Identifying Defects in Crystal</li> </ul>

	<ul style="list-style-type: none"> <li>• Data Challenge: Finding Hidden Patterns in High-resolution Wind Flow Model Simulations</li> <li>• Machine Learning: Geography Soil Data</li> </ul>
Remarks:	For MA or PHY students.

Institution:	University of Tennessee Department of Physics & Astronomy
Location:	United States
Supervisor:	Prof. Yishu Wang <a href="http://www.phys.utk.edu/people/faculty/wang.html">http://www.phys.utk.edu/people/faculty/wang.html</a>
Suggested project(s):	<ul style="list-style-type: none"> <li>• Applying Machine Learning methods to advance characterization of quantum materials by neutron diffraction</li> </ul>
Past project(s):	<ul style="list-style-type: none"> <li>• Magnetic study of Ce<sub>2</sub>Zn<sub>17</sub></li> </ul>
Remarks:	For PHY students only. Programming experience with Python is preferred.