

### 1. Physics Innovation and Education

| Code     | Title   | Speaker                      |
|----------|---|------------------------------|
| INV-S1-1 | <b>From Inspiration to Creation: How the KVIS Fab-Lab Enhances STEAM Education I</b>  | <b>Dr. Min Medhisuwakul</b>  |
| INV-S1-2 | <b>Design and Technology: A STEAM course at KVIS</b>  | <b>Mr. Sarun Nounjeen</b>    |
| O-S1-1   | Blended Active Learning Using 3D Printing Processes Incorporate with Open Approach Method: The Case Study in Physics of “the Objects’ Motion on Inclined Plane” | Anurak Udomvech              |
| O-S1-2   | Do grades measure learning in physics?  | Wittaya Mongchanapusakit     |
| O-S1-3   | Development of 360 Degree Virtual Tour with Hands-on Activities kits on Topic of Gears for a Flipped Robotics Camp  | Chinapat Mongkholisriwattana |
| O-S1-4   | Predicting the drag coefficient of object using machine learning.   | Noppadol Amornsubcharoen     |
| O-S1-5   | Online physics tutorial using problem-solving worksheet: A case study with preservice science teachers  | Arunee Eambaipreuk           |
| O-S1-6   | Investigation of Styrofoam Ball Stability in Acoustic Field   | Patcharakan Issarayangkul    |
| O-S1-7   | DeepHCC: Deep Learning Model for Real-Time Count Rate Determination of Particles in Homemade Cloud Chamber  | Panupatt Srisukhawasu        |
| O-S1-8   | Design and Fabrication of an Automatic Tensile Strength Testing Machine for Materials Science Research  | Bpoon Prapaso                |
| O-S1-9   | Visualization of Ideal RLC Series Circuit with Python   | Nutdanai Bodinthitikul       |
| O-S1-10  | Comparison of the Spiral Wave on the Fabric and the Gravitational Wave from the Orbiting Binary Black Hole  | Kanisorn Sawangsawai         |
| O-S1-11  | Enhancing Particle Size Characterization performance through Proficiency Testing Program: Results and Insights from Inter-Laboratory Comparison                 | Benjarat Ngansalung          |
| O-S1-12  | Invention of Bone-Density Measuring Instrument Using Stress Waves for Assisting in Osteoporosis Diagnosis   | Phattarachai Satsatranurak   |
| O-S1-13  | Diffraction method for finding the focal plane location of a lens   | Noparit Jinuntuya            |
| O-S1-14  | Design and development of OCR software for remote measurement and calibration   | Narusorn Nanna               |
| O-S1-15  | Device development with mathematical model to study heat capacity of liquids  | Kritsada Tadta               |
| O-S1-16  | An application of polychromatic UV-Vis-NIR excitation spectroscopy for ruby and sapphires   | Wiwat Wongkokua              |

### 2. Astronomy, Astrophysics and Cosmology

| Code     | Title   | Speaker                             |
|----------|---|-------------------------------------|
| INV-S2-1 | <b>Physics and Astro-particle with JUNO</b>   | <b>Dr. Utane Sawangwit</b>          |
| INV-S2-2 | <b>Explosive Death of Massive Stars</b>   | <b>Dr. Samaporn Tinyanont</b>       |
| O-S2-1   | Relations between kinematics and spatial extension of narrow-line regions in Type-II AGNs   | Kantapon Jensangjun                 |
| O-S2-2   | Theoretical study of Gravitational Wave within ultracompact star  | Byon Nugraha Jayawiguna             |
| O-S2-3   | Explanations of AMS-02 Electron and Positron Spectrum by Pulsar Wind Nebulae and Dark Matter Annihilation   | Kritaporn Butsaracom                |
| O-S2-4   | Merging galaxy simulations of Dual AGN candidate NGC 5252   | Manus Boonmalai                     |
| O-S2-5   | Experimental Setup Development for Interstellar Surface Chemistry   | Chutipong Suwannajak                |
| O-S2-6   | Emergent Spacetime, Gravitational Potential and Speed of Light in Superfluid Vacuum   | Konstantin Zloshchastiev            |
| O-S2-7   | Hidden Conformal Symmetry of Ultraspinning Black Holes  | Muhammad Fitrah Alfian Rangga Sakti |
| O-S2-8   | Thermodynamics and Phase Transition of the Schwarzschild Black Hole in Anti-de Sitter-Beltrami spacetime  | Tosaporn Angsachon                  |
| O-S2-9   | Thermodynamic stability of black holes with Renyi entropy   | Thanawat Anusonthi                  |
| O-S2-10  | Tachyonic dark energy with energy and momentum couplings to dark matter   | Chattree Wongsangwal                |
| O-S2-11  | The graybody factor for the Proca field on the Schwarzschild black hole spacetimes  | Supanat Bunjujuwan                  |
| O-S2-12  | The photon trajectories around the black hole with moving light source  | Nattawat Radjaroendee               |
| O-S2-13  | Cosmic inflation in minimally modified gravity theory constructed via perturbative analysis   | Jakkrit Sangtawee                   |
| O-S2-14  | The First Dark Sky Map of Chiangrai : two decades of change affecting Astro-tourism   | Farung Surina                       |
| O-S2-15  | Ionospheric response over Thailand from the 15 January 2022 eruption of the Hunga Tonga-Hunga Ha'apai volcano   | Paparin Jamlongkul                  |
| O-S2-16  | Analysis of Multiple Bulk Flows during the Collisionless Magnetic Reconnection  | Piyawat Suetrong                    |
| O-S2-17  | Transmission Spectroscopy Analyses of Jovian Planets with Hubble Space Telescope  | Thammasorn Padjaroen                |
| O-S2-18  | Pulsation of Lambda Bootis Stars: Results from TESS Space Telescope   | Jason B. Kalaw                      |
| O-S2-19  | The most massive Population III stars: an application of the extreme value theory   | Teeraparb Chantavat                 |
| O-S2-20  | Synergy in Extragalactic Astronomy with Observations through Temporal and Redshift Spaces (SEA OfTeRS): A Pilot Study on the Nature of a Comet-Like HII Galaxy. | Krittapas Chanchaiworawit           |
| O-S2-21  | Astrophysical Maser Flares Generated by Shocks  | Malcolm Gray                        |
| O-S2-22  | Masers probing evolved-star dynamics and transitional phases  | Sandra Etoke                        |
| O-S2-23  | Effect of magnetic field in 3D maser polarization simulation for circumstellar envelope of an evolving star   | Montree Phetra                      |
| O-S2-24  | The Dynamics of SiO outflow in G source of W49 N  | Kitiyane Asanok                     |

### 3. Accelerators, Particles physics and Field theory

| Code     | Title  | Speaker  |
|----------|--|--|
| KEY-S3-1 | <b>Accelerators Development in Thailand.</b>   | <b>Emeritus Professor Dr. Thiraphat Vilaithong</b> |
| INV-S3-2 | <b>Siam Photon Source-II: A 4th Generation Synchrotron Light Source in Southeast Asia</b>                        | <b>Dr. Prapong Klysubun</b>                        |
| O-S3-1   | X-ray and infrared spectroscopies study on impregnated activated carbon used as an adsorbent in respiration unit | Pisutti Dararutana                                 |
| O-S3-2   | Electron linear accelerator system for MIR free-electron Laser at Chiang Mai University                          | Kittipong Techakaew                                |

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|---------|---|-------------------------|
| O-S3-3  | Development of Mid-infrared Free-electron Laser Oscillator Light Source at Chiang Mai University  | Supasin Sukara          |
| O-S3-4  | Development of a Super-radiant THz Free-Electron Laser Facility at Chiang Mai University          | Kantaphon Damminsek     |
| O-S3-5  | Study of Negative Carbon-Ion Sources for Accelerator Mass Spectrometer by Computer Simulations    | Natthapong Saengwises   |
| O-S3-6  | Anomaly detection of CMS tracker using Autoencoder  | Pongsakorn Sriling      |
| O-S3-7  | Search for BSM Higgs boson using machine learning techniques.                                     | Patthadon Phengpinij    |
| O-S3-8  | Searching for Exotic Particles with Machine Learning Techniques at the LHC                        | Punnawich Chokeprasert  |
| O-S3-9  | Mass spectrum of $1^{++}$ heavy quarkonium  | Zheng Zhao              |
| O-S3-10 | Rényi Holographic Dark Energy   | Ratchaphat Nakarachinda |
| O-S3-11 | Inflation from Supersymmetry Breaking   | Auttakit Chatrabhuti    |
| O-S3-12 | Relations between tree-level closed string amplitudes and mixed string amplitudes at fewer points | Aphivat Yuenyong        |
| O-S3-13 | Nilpotent superfields for broken abelian symmetries   | Hiroshi Isono           |
| O-S3-14 | Hamiltonian Analysis on Einstein-Hilbert Action in ADM Formalism                                  | Tachma Aree             |
| O-S3-15 | Electroweak monopole in BPS limit   | Kitnutthep Dokkaew      |

#### 4. Atomic, Molecular and Nuclear physics

| Code     | Title  | Speaker                                     |
|----------|--|---|
| INV-S4-1 | <b>Status and Progress of the First Tokamak of Thailand (TT-1)</b>   | <b>Assoc. Prof. Dr. Somsak Dangtip</b>      |
| INV-S4-2 | <b>D-D neutron spectrometry in neutral-beam heated deuterium plasmas of the Large Helical Device</b>   | <b>Asst. Prof. Dr. Siriyaporn Sangaroon</b> |
| O-S4-1   | The production of charged particles and the kaonic nuclei $K^- p$ and $K^+ p^-$ in p+p collisions at $\sqrt{s_{NN}} = 7$ TeV                   | Natthaphat Thongyoo                         |
| O-S4-2   | Effect of Laser Detuning and Rabi Frequency on Rubidium Rydberg Electromagnetically-Induced Transparency for Atom-based Electric Field Sensing | Kittisak Ketaiam                            |
| O-S4-3   | Time of Flight Measurement in Cold Rubidium Atoms for Temperature Estimation   | Tanasin Sriwichai                           |

#### 5. Thermodynamics, Fluids and Statistical physics

| Code     | Title   | Speaker                          |
|----------|---|----------------------------------|
| INV-S5-1 | <b>Thermodynamics Formulation of Economics: Effect Structure and Supply Side Economy</b>  | <b>Prof. Dr. Burin Gumjudpai</b> |
| O-S5-1   | Topological defects in a vibrated 2D granular medium  | Sitichoke Amnuanpol              |
| O-S5-2   | A Study of Newton's Law of Cooling on Non-Newtonian Fluid using Fractional Calculus   | Narawich Tantiphitakchote        |
| O-S5-3   | Energy and exergy analysis with cost-efficiency comparison of modified phase change material (PCM) integrated with solar panel thermal system | Boonchai Naowapathiwech          |
| O-S5-4   | The manipulation of alloy additions and precipitation hardening of sterling silver for commercial uses.                                       | Pornnapha Denjarukul             |

#### 6. Quantum physics and Quantum information theory

| Code     | Title  | Speaker   |
|----------|--|---|
| INV-S6-1 | <b>Characterization of quantum signature of the emitted light from CdTeSeS quantum dots</b>                          | <b>Assoc. Prof. Dr. Surasak Chiangga</b>        |
| INV-S6-2 | <b>Spintronics toward JMRAM in superconducting computing systems</b>   | <b>Asst. Prof. Dr. Salinporn Kittiwatanakul</b> |
| O-S6-1   | Adiabatic Quantum Computation and NP-hardness Problems: Applications in Cyber Security                               | Sanpawat Kantabutra                             |
| O-S6-2   | Nonlinear bosonic Maxwell's demon  | Airach Ritboon                                  |
| O-S6-3   | Effects of material properties and engineering parameters on performance and decoherence of quantum memories         | Takla Nateeboon                                 |
| O-S6-4   | Investigating Quantum State Verification for Entangled Qutrit Stabilizer States Using Pauli Measurements             | Matachan Oupatam                                |
| O-S6-5   | The effect of under and over develop time in Josephson junction fabrication process using electron beam lithography  | Autpittayakul Aketasaeng                        |
| O-S6-6   | Generating Arbitrary-shape Array of Uniform Microtraps with Modified Gerchberg-Saxton Algorithm                      | Piyawat Chatchaichompu                          |
| O-S6-7   | Characterization of magnetic field for loading, trapping and transferring cold atom close to the atom chip's surface | Nuttida Kaewart                                 |

#### 7. Mathematical, Computational and Numerical physics

| Code     | Title  | Speaker                                       |
|----------|--|---|
| INV-S7-1 | <b>Hydrogen storage mechanism from complex-metal hydrides: Ab initio study for advancement of hydrogen energy technology</b>   | <b>Assoc. Prof. Dr. Proyoonsak Pluengphon</b> |
| INV-S7-2 | <b>On-the-fly active learning of interatomic potentials for temperature-dependent atomistic simulations: Exploring thermodynamic and elastic properties of materials</b>               | <b>Asst. Prof. Dr. Ittipon Fongkaew</b>       |
| O-S7-1   | Denosing Diffusion Models for Crystal Structure Generation   | Teerachote Pakornchote                        |
| O-S7-2   | A Simulation Study of Magnetic Nanoparticle Clustering in a Fluid Flow   | Thitiwat Kosolpattanadurong                   |
| O-S7-3   | Study of Topological and Physical Properties of Schwarzschild and Kerr Space-Time Equipped with Zeeman Topology  | Peem Ubonsri                                  |
| O-S7-4   | Solitons collision to weakly nonlinear ion-acoustic waves with external magnetic field   | Sarun Phibanchon                              |
| O-S7-5   | Design and Fabrication of a Flexible Thermoelectric Generator: An Experimental and Simulation Study  | Jakrit Gobpant                                |
| O-S7-6   | Thermoelectric couple size optimization of thermoelectric generator for waste heat recovery systems using three-dimensional numerical simulation and multi-objective genetic algorithm | Naruesorn Prabpon                             |
| O-S7-7   | An attempt to use Convolutional Neural Network to recover layered earth structure from electrical resistivity tomography survey  | Kittipong Phueakim                            |
| O-S7-8   | The influences of 3-D electrical resistivity anisotropy on the surface responses of magnetotelluric  | Wisart Thongyoy                               |
| O-S7-9   | Control and optimization of virtual power plants(VPP)  | Suphanat Rojsirisith                          |
| O-S7-10  | Sinkhole detection and assessment using direct-current resistivity modeling: a case study in Tak Province Thailand   | Natjaree Pintanod                             |

### 8. Condensed matters and Material physics

| Code     | Title   | Speaker                             |
|----------|---|-------------------------------------|
| INV-S8-1 | Binary and ternary semiconductor compounds for electrochemical devices  | Assoc. Prof. Dr. Auttasit Tubtintae |
| O-S8-1   | Purifying VO <sub>2</sub> phase synthesized by sol-gel method via annealing process   | Rattachanok Chongprasit             |
| O-S8-2   | Studying magnetic structure of PbCu <sub>3</sub> TeO <sub>7</sub> with S = 1/2 staircase Kagome lattice                                 | Joradol Jansawang                   |
| O-S8-3   | Effect of Number of Stacking Layers to Radiative Efficiency of InGaAs/GaAs/GaAsP/GaAs Multiple Quantum Well                             | Warakorn Yanwachirakul              |
| O-S8-4   | Dielectric properties of graphitic carbon nitride in bulk and nanosheets form   | Tosapol Maluangnont                 |
| O-S8-5   | Lattice thermal conductivity of Mxenes Ti <sub>2</sub> C and Ti <sub>3</sub> C <sub>2</sub> by on-the-fly machine-learning force fields | Thanasee Thanasarnsurapong          |
| O-S8-6   | Magnetoconductance oscillations in electron-hole hybridization gaps in tetralayer graphene  | Illias Klanurak                     |
| O-S8-7   | Quantum Oscillations of Pseudomagnetoresistance in Tunable Tilt-Mismatch Dirac-cone Junction  | Phachara Rakrong                    |
| O-S8-8   | Combining machine learning force fields and density functional theory for transition-metal dichalcogenides properties predictions       | Panyalak Detrattanawichai           |
| O-S8-9   | Effect of the Coulomb potential in three-dimensional electron gas Einstein phonons  | Worapon Phatcharasirinawakun        |
| O-S8-10  | Numerical Analysis of Superconducting Critical Temperature  | Komkrit Rientong                    |
| O-S8-11  | Simplified Models for Electron-Phonon Interactions in Materials: Insights from Theory and Experiment data                               | Napob Na Ranong                     |

### 9. Biophysics, Radiation, Plasma and Nano-physics

| Code     | Title   | Speaker                            |
|----------|---|------------------------------------|
| INV-S9-1 | Pilot Plant of Automatically Producing Graphene Derivatives in Industrial Scale and Its Applications  | Assoc. Prof. Dr. Chesta Ruttanapun |
| INV-S9-2 | Plasma innovation creates value for creative community products for the new normal lifestyle  | Dr. Saweat Intarasiri              |
| O-S9-1   | Hearing disease diagnosis by using pairs of auditory illusion words   | Rujipart Thamwirotsiri             |
| O-S9-2   | Using magnetised water to remove surface contamination of Brassica sp vegetables by organophosphate pesticides.   | Raymond J. Ritchie                 |
| O-S9-3   | Soil-to-organic Sangyod rice grain transfer of natural and anthropogenic radionuclides in Phatthalung province, Thailand  | Prasong Kessaratikoon              |
| O-S9-4   | Viability determinations of yeast cells using the lower critical frequency of dielectrophoretic spectra for brewery industry                                    | Paphawarin Srichan                 |
| O-S9-5   | Investigation of Liquid Water Properties by Using Spectroscopy Technique from Infrared to Terahertz Region.   | Nuttawat Khammata                  |
| O-S9-6   | Nightingale®, an air plasma jet device, activates Ringer's lactate solution plus Cannabidiol to selectively kill lung cancer cells—A549 and H1299               | Pipath Poramapijitwat              |
| O-S9-7   | Modeling simulation of nitrogen and oxygen species generated by the Compact Air Plasma Jet: NIGTHINGALE®  | Nattawut Palee                     |
| O-S9-8   | Simulation and Preliminary Test of Various Absorbers for the pCT Calorimeter  | Yaowaluk Buanill                   |
| O-S9-9   | Determination of Integral Depth Dose in Proton Pencil Beam of the Varian ProBeam Compact spot scanning system using FLUKA Monte Carlo simulation                | Nataporn Piniktha                  |
| O-S9-10  | The study of Proton Computed Tomography of Electron Density Phantom using the Gbeamline program and performing the proton beam experiment with an ALPIDE sensor | Gedchadapars Rattanasupha          |
| O-S9-11  | In vitro studies of Cholangiocarcinoma cell lines response to X-rays and Neutron irradiation  | Yuwadee Malad                      |

### 10. Optics and Photonics and Instrumentations

| Code      | Title   | Speaker   |
|-----------|---|---|
| KEY-S10-1 | Low-dimensional structured materials for optical harvesting and management  | Prof. Dr. Wisanu Pecharapa                      |
| INV-S10-2 | Visible and Infrared emission characteristics of Pr <sup>3+</sup> :Ba(PO <sub>3</sub> ) <sub>2</sub> +La <sub>2</sub> O <sub>3</sub> glasses: A comparative study | Prof. Dr. Chalicheemalappalli Kulala Jayasankar |
| INV-S10-3 | X-ray Absorption Spectroscopy : The State of The Art Synchrotron-based Characterization for Energy Materials  | Dr. Pinit Kidkhunthod                           |
| O-S10-1   | 450-nm laser heating for compact atomic magnetometers   | Kwanruthai Sibsiri                              |
| O-S10-2   | A development of the calibration method for field pyranometers using satellite image data   | Korntip Tohsing                                 |
| O-S10-3   | Fluorescence Lifetime Measurements of Quantum Emitters with Wavelength-Tunable Source   | Sorawis Sangtawesin                             |
| O-S10-4   | Study of the optical logic gates using Mach-Zehnder Interferometer  | Nithiwit Rotchanarak                            |
| O-S10-5   | Commissioning Results of the IR beamline at SLRI  | Thananphat Phonthongchanthuek                   |
| O-S10-7   | Design and development of THz time domain spectroscopy system at PCELL  | Siriwan Pakluea                                 |
| O-S10-8   | Comparative Analysis of Acquisition Techniques for Improving Image Quality in Terahertz Computed Tomography   | Kan Keawhanam                                   |
| O-S10-9   | Optimizing Thickness of Tin Oxide Electron Transporting Layer to Reduce Hysteresis in Carbon-based Perovskite Solar Cells   | Thanawat Kanlayapattamapong                     |
| O-S10-10  | Insight into the Abraham-Minkowski controversy through torsional balance experiment   | Thanabodi Worakitthamong                        |