Theses proposed at IJCLab starting in autumn 2021

(more information by clicking on the PhD subject)

N° Ref.	PhD subject	Keywords	ED	Thesis director
32432	Gamma spectroscopy of the exotic 79Cu nucleus Closed	nuclear structure, exotic nuclei	PHENIICS	FRANCHOO Serge LJUNGVALL Joa
32579	Probing neutron-proton pairing in N-Z nuclei	nuclear structure, direct reactions, pairing, deformation, radioactive beams, semi-conductor detectors	PHENIICS	ASSIE Marlène BLUMENFELD Yorick
32596	Angular analysis of the Bs -> Phi ee decay and participation to the electromagnetic calorimeter commissioning within the LHCb experiment. Closed	LHCb, Angular analysis, Calorimeter, FCNC, New physics	PHENIICS	SCHUNE Marie-Hélène
32629	Many-body correlations for neutrinoless double beta decay	Theoretical project, Weak-interaction process , Links with particle physics - cosmology and neutrino physics, Nuclear matrix elements for the half-life, Many-body techniques with complex configurations	PHENIICS	GRASSO Marcella
32633	Study of Vector-Boson Scattering with the ATLAS detector and design of the High Granularity Timing Detector for HL-HLC Closed	Electroweak interaction, Beyond the Standard Model, Machine learning, High Granularity Timing Detector, Electronique de lecture frontale, Rejection de l'empilement	PHENIICS	MAKOVEC NIKOLA

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32635	Collectivity and shape coexistence in lanthanide nuclei close to the proton drip-line Closed	Nuclear structure, prompt and decay spectroscopy, nuclear deformation, fusion-evaporation reactions, isomers, proton drip-line	PHENIICS	ASTIER Alain PETRACHE Costel
32652	From Hot Universe to Dark Matter Closed	Early Universe, Dark Matter, Astroparticle, Reheating, Inflation / inflaton, Thermal equlibrium	PHENIICS	MAMBRINI Yann
32672	Nucleon structure studies at Jefferson Lab and the Electron-Ion Collider Closed	Hadron physics, Nucleon structure, Jefferson Lab, Electron-Ion Collider (EIC)	PHENIICS	NICCOLAI Silvia MUNOZ CAMACHO Carlos
32712	Search for neutral nuclei : investigation of the 6-neutron system	multineutrons, Cluster quasifree scattring reactions , Inverse kinematics, Missing mass	PHENIICS	BEAUMEL Didier
32744	QCD corrections to quarkonium production in TMD factorisation: applications to the LHC and EIC	Quarkonium, QCD, Radiative corrections, TMD factorisation	PHENIICS	LANSBERG Jean-Philippe
32755	Investigation of radiation effects in materials implementing an integrated, experimental and computational approach – Application to materials for particle detector devices and for nuclear energy	Material science, irradiation effects, modelling, experiments	PHENIICS	DEBELLE Aurélien

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32818	Transport and interactions of high energy electrons, photons and neutrons. Application to the radiation safety of a 4th generation synchrotron light source. Closed	Synchrotron, Radiation, Activation, Radiation protection	PHENIICS	DELERUE Nicolas
32837	Constraints on new physics using Vector Boson Scattering processes	Particle Physics, LHC, ATLAS, Vector boson scattering, Calorimetry	PHENIICS	MORANGE Nicolas
32874	Etude de l'interaction entre les rayons cosmiques et les poussieres interstellaires	interaction ion matiére, études expérimentales	PHENIICS	CHABOT Marin
32894	Development of a wireless beta+ microprobe based on pixellated CMOS technologies for in vivo brain studies in freely moving rats Closed	PET imaging, nuclear instrumentation, Monte Carlo simulation, small animal imaging, neuroscience, behavioral studies	PHENIICS	LANIECE Philippe VERDIER Marc-Antoine
32942	Implementation of a monochromatic scheme for the direct s-channel Higgs production at FCC-ee	monochromatization, optics design, beam-beam, beam dynamics simulation, beamstrahlung	PHENIICS	FAUS-GOLFE Angeles ZIMMERMANN Frank
33033	Tensor field theory and stochastic differential equations Closed	Quantum field theory, Stochatic quantization, Regularity Structures, Random Tensors, Quantum Gravity	PIF - 564	RIVASSEAU Vincent
33039	Superfluid fraction in the neutron-star inner crust	neutron stars, superfluidity	PHENIICS	URBAN Michael

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33045	Description ab initio of nuclear decay and break-up during reactions in light nuclei. Closed	ab initio method, nuclear collisions, nuclear theory	PHENIICS	HUPIN Guillaume GRASSO Marcella
33055	Angular analysis of the Lb -> Lambda ee decay within the LHCb experiment. Closed	B-physics, Rare Decays	PHENIICS	SCHUNE Marie-Hélène
33066	Charmonium photoproduction in Pb-Pb collisions with nuclear overlap measured with ALICE at the LHC Closed	photoproduction, ALICE, charmonium, LHC, Quark Gluon Plasma, Quantum Chromodynamics	PHENIICS	MASSACRIER Laure HADJIDAKIS Cynthia
33094	Measurements of Neutrino Properties with DUNE experiment	Neutrino, DUNE, PMNS Matrix, Instrumentation, Data Analysis	PHENIICS	CAVALIER Fabien
33099	Measurement of the gamma angle with the Lambda_b -> D0 p K at the LHCb experiment Closed	CP violation, flavour physics, LHCb experiment, beauty, baryon	PHENIICS	ROBBE Patrick
33103	Luminometer for the LHCb experiment at CERN Closed	luminosity measurement, Cherenkov light detector	PHENIICS	BARSUK Sergey
33115	Beating the Standard Quantum Limit for the gravitational wave detector Advanced Virgo	ondes gravitationnelles, squeezing, optique quantique	PHENIICS	LEROY Nicolas
33122	Search for CP violation in tau decays with the Belle II detector	violation de CP, lepton tau	PHENIICS	MARTENS Aurélien LE DIBERDER François

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33126	Impact of photometric calibration on rubin telescope (LSST) performance	Large scale structure, Telescope, Calibration, Holography, Spectroscopy, Photometry	PHENIICS	DAGORET-CAMPAGNE Sylvie MONIEZ Marc
33139	Astrophysics via mass spectrometry of exotic nuclides at CERN and ALTO	astrophysics, nuclear structure, radioactive beams, ion traps, precision measurements	PHENIICS	LUNNEY David
33148	Study of neutron/gamma competition in the de-excitation process of fission fragments	gamma spectroscopy, neutron spectroscopy, GEANT4 simulation, fission process	PHENIICS	LEBOIS Matthieu VERNEY David
33156	Study of prompt and delayed gamma/neutron emission in nuclear fission Closed	Fission, Spectroscopy, Nuclear, Reactions, Neutrons, Gammas	PHENIICS	WILSON Jonathan CHARLES Gabriel
33160	The energy spectrum of cosmic rays at the highest energies in the light of the composition with AugerPrime	Energy reconstruction , cosmic rays, composition, universality	PHENIICS	YVON Isabelle
33161	Development and characterization of a prototype detector based on emerging liquid opaque scintillator technology Closed	Instrumentation, LiquidO, ionising radiation detection, scintillation detection, neutrinos and rare decay physics	PHENIICS	HULL Giulia CABRERA Anatael
33165	Study of lanthanide ion complexation with hydroxamic acid ligands for nuclear medicine applications	radionuclides, lanthanides, terbium, hydroxamic acid ligand, complexation, thermodynamic parameters	PHENIICS	SLADKOV Vladimir

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33167	Inflation: phenomenological study and preparation of the LiteBIRD space mission Closed	Supersymmtry, Inflation, Cosmology, Cosmic Microwave background	PHENIICS	HENROT-VERSILLE Sophie
33170	Development of novel cryogenic detectors for coherent elastic nucleus-neutrino scattering and direct dar matter searches	Coherent Elastic Nucleus-Neutrino Scattering, Dark Matter, Ge cryogenic detectors	PHENIICS	MARNIEROS Stefanos
33173	Solutions of the Flavour Problem through Effective Theories **Closed**	Particle physics, Theoretical physics, Flavour physics, Effective field theories, b physics, Beyond Standard Model Physics	PHENIICS	DESCOTES-GENON Sebastien SUMENSARI Olcyr
33185	21 cm Intensity Mapping : Tianlai & PAON4/IDROGEN	Cosmology, Dark Energy, Radio interferometry, Intensity Mapping, Baryon Acoustic Oscillations (BAO's)	PHENIICS	ANSARI Réza PERDEREAU Olivier
33406	Heavy Photon Search with the HPS experiment at Jefferson laboratory	Particle physics, Heavy photon	PHENIICS	DUPRE Raphael
33540	Optimization of a pulsed Inverse Compton X-Ray Source on an electron linear accelerator	X ray source, Inverse Compton, laser, Optics, Electron beam	PHENIICS	DELERUE Nicolas

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33681	Fundamental particle physics with the novel liquido Closed	LiquidO, neutrinos and rare decay physics, neutrino detection and instrumentation, fundamental particle physics	PHENIICS	CABRERA Anatael
33756	Nuclear industry technological innovation with the novel liquido detection technology	D&D (Decontamination and Decommissioning), Applied Particle Physics, Radiation Detection and Instrumentation	PHENIICS	CABRERA Anatael
33978	Regulation system for the MYRRHA accelerator	accelerator, superconductivity	PHENIICS	CHABOT Marin
34304	Astronomie multi-messagers avec les detecteurs d'ondes gravitationnelles LIGO-Virgo-KAGRA et les observations X du satellite SVOM	ondes gravitationnelles, sursauts gamma, LIGO Virgo KAGRA, SVOM	PHENIICS	ROBINET Florent DAL CANTON Tito
34328	Phénoménologie en physique des saveurs dédiée à la recherche de signaux de physique des particules au-delà du Modèle Standard. Closed	Phenomenology of particle physics of flavour to search for signals beyond the Standard Model	PHENIICS	KOU Emi

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34740	Scenario of cluster formation in violent nuclear processes: microscopic description as a function of density and time	dynamique nucléaire, modèles de transport, processus stochastiques, collisions d'ions lourds, clusters nucléaires	PHENIICS	NAPOLITANI Paolo
35031	Study and mitigation of collective effects in the transport of relativistic electron beams with high peak current in single or multiple pass particle accelerators Closed	accelerator, collective effects, laser plasma accelerator, energy recovery linac	PHENIICS	BRUNI Christelle
35666	Manipulation study of ultrashort electron bunches manipulation with a THz dielectric cavity	dielectric cavity, ultrashort electron bunch, femtosecond bunch, acceleration, compression, deviation	PHENIICS	MARTINET Guillaume PUZO Patrick
35730	Associated production of quarkonium with jets with QCD corrections: towards an interface to general-purpose Monte-Carlo codes Closed	Quarkonia, Jets, Monte-Carlo codes, QCD corrections	PHENIICS	LANSBERG Jean-Philippe
36042	Chemistry of graphite, magnesium and uranium in molten hydroxides for waste treatment / conditioning operations	Molten hydroxides, Analytical chemistry, Metallic wastes, Nuclear energy	PHENIICS	DELPECH Sylvie CANNES Céline
36047	Machine learning for nuclear data in nuclear astrophysics	Machine learning, Equation of state, Neutron star, Nucleosynthesis	PHENIICS	KHAN Elias

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36111	Extragalactic gamma-ray astronomy and gamma-ray cosmology with CTA Closed	Astroparticle physics, High-energy astrophysics	PHENIICS	BITEAU Jonathan
36280	Application of Amplitude Analysis for heavy hadron decays in search of new physics effects	Flavour Physics , Physics Beyond the SM	PHENIICS	KOU Emi
36493	Modélisation des interfaces pour la résolution de l'équation de Boltzmann : focus sur la remontée de flux axiale dans les assemblages UOX et MOX des réacteurs REP. Closed	nuclear reactor physics, Diffusion coefficient	PHENIICS	DOLIGEZ Xavier
36615	Fine characterisation of Rubin/LSST photometric redshifts and benefits of external complementary data sets	Cosmology, Dark Energy, photometric redshifts, LSST , Rubin	PHENIICS	ANSARI Réza DAGORET-CAMPAGNE Sylvie
37343	Numerical optimization of laser-plasma injector	accelerator, laser plasma, numerical simulation, particle in cell	PHENIICS	CASSOU Kevin KAZAMIAS Sophie
37412	Multi-messenger astronomy: scientific exploitation of Vera Rubin Observatory and SVOM alert streams Closed	Astronomy, Big data, Transient sky, Machine learning, Cloud computing	PHENIICS	PELOTON Julien LEROY Nicolas

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37709	Radiative corrections to the simulation of inclusive quarkonium production in isolation, inside a jet and in ultra-peripheral collisions Closed	Quarkonium production, Simulation, Radiative corrections	PHENIICS	LANSBERG Jean-Philippe
37746	Nuclear systems on lattices simulated with quantum computers Closed	nuclear physics, many-body problem, quantum computers	PHENIICS	LACROIX Denis