Andrianomentsoa **RAZANAJATOVO**

PhD candidate in condensed matter theoretical physics

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Training

Now September 2022	Master 2 Fundamental physics, Aix-Marseille university, Marseille
May 2022 September 2021	Master 1 Fundamental physics, Aix-Marseille university, Marseille
March 2020 September 2019	Master 2 Astrophysique, Sciences de l'Espace et Planétologie, UPS, Toulouse
June 2019 September 2018	Master 1 Sciences de l'Univers et Techniques Spatiales, Université Paul Sabatier(UPS), Toulouse
June 2018 September 2017	Bachelor 3rd year Fundamental physics, UPS, Toulouse

Experiences and projects

Since December 2024	PhD : Characterization of material's topological nature through their response to an impurity Laboratoire Ondes et Matière d'Aquitaine, Bordeaux, Supervisor : Pr. Dutreix and Pr. Cayssol Crystal fluctuations of the density of states in the presence of an impurity are studied in Fourier space to find a way to reconstruct band topology and geometry
Juin 2023 Mars 2023	Internship : Twisted bilayer graphene, topological heavy fermion model and study of its Berry curvature, Laboratoire de Physique des Solides, Orsay, Supervisor : Pr. GOERBIG M. Berry curvature study of a 6-band model of twisted bilayer graphene, which encodes experimentally observed behavior. Numerical computation of the Berry curvature and analysis of its variation with respect to parameters of the Hamiltonian.
Juin 2022 Mars 2022	Internship : Detection of Majorana fermions in topological superconductors, Centre de physique théorique, Marseille Supervisor : Pr. MARTIN T. Review of superconductors and Kitaev toy model of a topological superconductor emphasizing the topological phase. Use of Keldysh formalism to study the computation of the topological superconductor's density of state by a scanning tunnel microscope.
Janvier 2022	Numerical study of lattice spin Ising model We were interested in a numerical study of a material exhibiting ferromagnetic properties. To that end, using Fortran language and the classical Ising model, we treated this system by the Metropolis algorithm. We deduced physical properties through the calculation of the magnetization and the energy of the lattice.
Septembre 2021 Octobre 2020	Sabbatical year Autodidact study of mathematical tools (Variational principle, spinor and tensor, topology, differential geometry...) helped by "Méthodes classiques en physique théorique" written by Richard Kerner, improvement of my programming skills (C, C++), implementation in theoretical physics.