

**Research Studentships (Master or Integrated Master students)**

Applications are open for one Research Studentship, within the framework of the project “Scalable Quantum Liouvillian Tomography” (SCALE-QLT), reference 2024.16192.PEX, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

**Scientific Area:** Physics / Physical Sciences / Condensed Matter Physics

**Admission Requirements:**

a) To hold a Bachelor degree in Physics, Engineering Physics, Quantum Technologies, Applied Mathematics, or a related area, and to be enrolled in an integrated master or master programme;

b) Previous experience in quantum dynamics, open quantum systems, strongly correlated systems, scientific programming, numerical methods, and/or Green’s-function/Keldysh techniques will be valued.

**Workplan:** The work will be carried out in the context of the SCALE-QLT project and will focus on the topic “Open SYK model”. The selected candidate will study the non-equilibrium dynamics of strongly correlated open quantum systems, using the Sachdev-Ye-Kitaev (SYK) model as a controlled theoretical platform. The work will include: (i) reviewing the relevant literature on open quantum systems, Lindblad dynamics, non-Markovian environments, and the SYK model; (ii) implementing or extending numerical routines for the solution of the Schwinger-Dyson equations of open SYK models coupled to structured baths; (iii) computing steady-state and/or real-time correlation functions and extracting relaxation regimes; and (iv) analysing how dissipation strength, bath structure, and temperature affect the competition between chaos-induced and bath-induced relaxation. The expected outputs are documented code, numerical benchmarks/figures, and a short technical report summarising the results. The work is relevant for the student’s advanced training in theoretical and computational quantum physics, open quantum systems, and non-equilibrium many-body dynamics.

**Legislation and Regulations:** Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://dre.pt/application/file/a/127230968>.

**Workplace:** The work will be developed at CeFEMA - Center of Physics and Engineering of Advanced Materials, Instituto Superior Técnico / Associação do Instituto Superior Técnico para a Investigação e o Desenvolvimento (IST-ID), under the scientific supervision of Professor Pedro Ribeiro.

**Duration:** The research fellowship will have the duration of 3 months. It is expected to begin as soon as possible, and will not be renewable, unless otherwise authorised within the applicable regulations, availability of funds, and project duration.

**Monthly maintenance allowance:** According to the values for Research Fellowships awarded by FCT in Portugal, the amount of the monthly maintenance allowance is € 1090,98, being the payment method an option of the Fellow by Wire Transfer/Check.

**Selection methods:** The selection method will be curriculum evaluation (100%). The evaluation will consider the adequacy of the candidate’s academic background and CV to the work plan, with particular emphasis on previous experience in quantum dynamics, open quantum systems, strongly correlated systems, scientific programming, and numerical methods. If deemed necessary by the jury, the best-ranked candidates may be invited for an interview to clarify elements of the CV; in that case, the interview will not have an autonomous weighting and will only serve to support the curriculum evaluation.



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**Composition of the selection Jury:** Professor Pedro Sacramento; Professor Pedro Ribeiro; Professor Giuseppe De Tomasi.

**Announcement/ notification of the results:** The final evaluation results will be communicated to all applicants by email.

**Deadlines and procedures of complaint and appeal.** A complaint may be lodged from the final decision within 15 working days, or an appeal to the Executive Board of IST-ID within 30 working days, both counted from the respective notification

**Application deadline and formalization:** The call is open from June 12 until June 25, 2026.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/recursos-humanos/bolseiros/#documentos-relacionados> ); ii) Curriculum Vitae; iii) academic degree certificate, where applicable; iv) proof of enrolment at an academic degree course (Master or Integrated Master); v) motivation letter.

Applications must be submitted to the email: [ribeiro.pedro@tecnico.ulisboa.pt](mailto:ribeiro.pedro@tecnico.ulisboa.pt)



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