JOB OFFER

Position in the project:	PhD student
Scientific discipline:	Physics
Job type (employment contract/stipend):	Full-time employment
Number of job offers:	2
Remuneration/stipend amount/month *("X0 000 PLN of full remuneration cost, i.e. expected net salary at X 000 PLN"):*	Full time employment for 43 months with negotiable starting date (but not later than 1st of February 2020). Scholarship: 3800 PLN/900 EUR per month (untaxed). Additional development fund (for conference fees, travel, summer schools etc.): 3800 PLN/900 EUR per month.
Position starts on:	1 January 2020 – 1 March 2020 (flexible starting date)
Maximum period of contract/stipend agreement:	43 months
Institution:	Jagiellonian University
Project leader:	Prof. dr hab. Marek Kuś / Group leader: Prof. dr. hab. Erik Aurell
Project title:	*Near-term quantum computers, optimal implementations and applications* ***Project is carried out within the TEAM-NET programme of the Foundation for Polish Science***
Project description:	The group is established as a part the "Near-term quantum computers, optimal implementations and applications" (NISQ) project which has the goal characterize the computational power and to investigate possible practical applications of quantum computing devices consisting of a limited number of imperfect qubits. The Quantum Error Correction Group in NISQ aims at developing new techniques to cope with noise and imperfections affecting quantum systems from physically motivated interactions with realistic environments using techniques of statistical physics and open quantum systems. The goals of the group will evolve over time building on collaboration and synergies within NISQ, and the wider community. Current near- and/or intermediate-term objectives are to • estimate quantitatively the influence of non-harmonic baths on the dynamics of a quantum system, and translate this understanding into new global statements on errors in quantum operations; • develop and apply the theory of quantum large deviations to describe, predict and mitigate the effects of large and rare events in open quantum system dynamics; • develop quantum control processes which also take into account the disorder generated in the environment ("Landauer heat"); • analyze quantum thermal engines as analogues of imperfect quantum computational devices, and as means to produce intrinsically quantum resources e.g. entangled states in large quantities.

	The group will be led by Erik Aurell. Detailed research agenda, with the description of specific research directions that the group will pursue is available on https://nisq.eu/static/docs/aurell_agenda.pdf. NISQ is funded by Foundation for Polish Science. Within NISQ has been formed a network of four closely collaborating research groups, working on cutting-edge aspects of quantum technology. The other groups are: Quantum Computing Group, led by Michał Oszmaniec from Center for Theoretical Physics of the Polish Academy of Sciences (Warsaw), Quantum Machine Learning Group, led by Zbigniew Puchała from Institute of Theoretical and Applied Informatics of the Polish Academy of Sciences (Gliwice) and Quantum Resources Group, led by Kamil Korzekwa from Jagiellonian University (Kraków).
Key responsibilities include:	**Key responsibilities:** 1. Gaining expertise in the fields of open quantum systems and quantum computation. 2. Active scientific research. 3. Presenting results at workshops and conferences 4. Involvement in group activities (seminars, group meetings, etc.)
Profile of candidates/requirements:	Having a status of a PhD student on the starting date. Good spoken and written English. A strong mathematical background and a good knowledge of the following subjects: • Quantum physics • Equilibrium statistical physics • Non-equilibrium statistical physics A proven research record (record of publications or talks) will be considered an asset, as well documented experience in scientific programming. Jagiellonian University is an equal opportunity employer.
Required documents:	Applications should be submitted by e-mail to erik.aurell@gmail.com with the subject line "NISQ PhD 2019 Aurell". Applications should include: 1. Curriculum vitae (including a research record with a list of publications, talks and academic awards). 2. Short personal statement describing research interests and reasons to apply (max. 1 page). 3. Declaration confirming the participation in PhD studies at the starting date. 4. Names and contact details (e-mail addresses) of at least one senior researcher who may provide references for the candidate. The candidate is expected to contact the referees and ask them to email reference letters to erik.aurell@gmail.com (the letters must be sent before the deadline). Shortlisted candidates will be invited for an interview. We expect that the interview will be held in second half of November in Kraków. Confirmation will be sent to the prospect candidates shortly after the application deadline. Questions should be emailed to: erik.aurell@gmail.com.

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Please submit the following documents to:	erik.aurell@gmail.com The subject line should be marked line "NISQ PostDoc 2019 Aurell".
Application deadline:	08 November 2019
For more details about the position please visit (website/webpage address):	https://nisq.eu/static/docs/aurell_agenda.pdf
Euraxess job/stipend offer (in case of PhD, postdoc, leader and young leader positions):	https://euraxess.ec.europa.eu/jobs/452406

Due to the entry into force of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, we also require that your job advertisements include a clause requesting the candidate's consent to the processing of his or her personal data by the institution which carries out the recruitment process.