

## Looking for a PhD project in forefront research?

We are two tenure-track professors of the Vienna University of Technology (Ass.-Prof. Alessandro Toschi) and of Graz University of Technology (Ass.-Prof. Lilia Boeri) and we are looking for **two outstanding PhD candidates** to work on a joint computational project on:

### ***“Collective Phenomena in correlated oxide films and heterostructures”***

➤ **Oxide interfaces and heterostructures** are at the core of next-generation nanoelectronics due to a wealth of functionalities arising from the intermingled action of lattice, orbital, and electronic degrees of freedom. The theoretical description of these systems requires methods at the frontier of materials modeling. The main objective is the computational study of collective phenomena in surfaces, interfaces and heterostructures of transition metal oxide (TMO) perovskites: we aim first at fundamental understanding the interplay among dimensional confinement, electronic correlations, spin-orbit coupling and electron-lattice interactions, and then at exploiting it for future materials design. This can be achieved by employing a combination of *ab-initio* (DFT) and quantum-many-body methods (DMFT), developed within our groups and the **Special Research Area ViCoM** (Vienna Computational Material Laboratory). ViCoM is an Austrian consortium, which comprises 10 research teams of the Vienna University of Technology, University of Vienna and Graz University of Technology, working on the simulation of condensed- and soft-matter systems (<http://www.sfb-vicom.at>). You may have a look at our past and current research activity on our web pages: <https://lboeri.wordpress.com> and <http://www.ifp.tuwien.ac.at/qmb/>.

➤ **We are looking for** two candidates with a strong motivation to carry out independent research in an international environment. The ideal candidates should hold a master degree in physics, have a strong interest in theoretical physics and computational modeling. Previous experience in *ab-initio* calculations and/or strongly correlated electron physics is desirable, but not needed. The working language is English; knowledge of German is not a pre-requisite.

➤ **We offer** a three years (36 months) PhD position, with salary based on the official rates of the Austrian Science Fund (FWF): <https://www.fwf.ac.at/en/research-funding/personnel-costs/> (this includes standard benefits, such as holidays and health insurance. You will be part of the doctoral program of the host universities (TU Graz, TU Wien) and participate in ViCoM activities and schools.

**How to Apply:** Enquiries and applications should be sent by e-mail to our addresses: [l.boeri@tugraz.at](mailto:l.boeri@tugraz.at) and [toschi@ifp.tuwien.ac.at](mailto:toschi@ifp.tuwien.ac.at). Applications should include a motivation letter and a CV (with university grades, description of research interests, names and email addresses of possible referees). In the application indicate any previous experience with density functional theory codes and/or many body theory for correlated electron systems. **The deadline for applications is March 15<sup>th</sup>, 2015.**