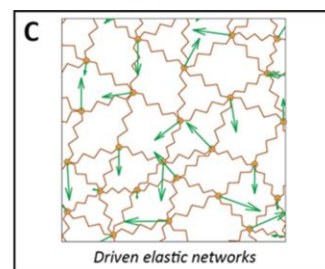
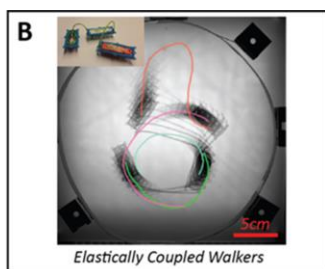
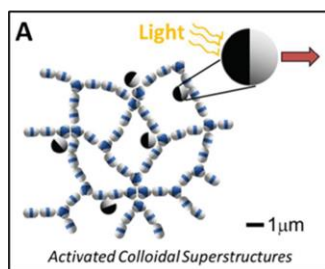


PhD position in Soft Condensed Matter and Theoretical Physics: Active Architected Materials

The [Institute of Physics](#) of the University of Amsterdam is looking for an excellent, highly motivated PhD candidate who will discover the physics of active architected materials.

While active fluids consisting of small self-propelling particles have opened very recently a new domain in non-equilibrium physics, their solid counterparts remain completely unexplored. Driven solid architectures have many examples in living matter such as in our own tissues, where molecular motors stiffen and contract biopolymer networks, but their physics remains poorly explored. This project aims at tailoring artificial systems that combine activity and elastic architecture, and unraveling their emergent collective behaviour, e.g. locomotion, shape changes and unusual transport properties.

The project will combine microscopic and macroscopic scale experiments with numerical simulations: the PhD candidate will self-assemble, 3D print and simulate active architected materials, allowing him to bridge from the micron to the centimetre scale and probe the emergence of active elastic instabilities and nonlinear motion.



Systems of study:

Active colloidal networks, Elastically coupled minibots, and simulated driven networks

About the Laboratory

The research will be conducted in the experimental Soft Matter and theoretical Statistical Mechanics groups of the Institute of Physics. It will combine research on meta materials (Dr. Corentin Coulais), active colloidal assembly (Prof. Peter Schall), and network mechanics (Dr. Edan Lerner). Over the past few years, the PI's have independently pioneered and developed the necessary ingredients of colloidal assembly control, 3D printing of metamaterials and simulations of driven elastic networks, which should be brought together in this project. This innovative project thus aims at combining and cross-fertilizing this wide range of expertise in order to discover the physics of active architected matter across scales.

Requirements

You have a Master's degree in physics, mathematics, engineering, chemistry or a related field. You have a strong taste for combining experiments, numerical simulations and theory and you have outstanding skills in at least two of these approaches. You have excellent written and oral communication skills in English.

Contact Information

Dr. Corentin Coulais
Assistant Professor
[Machine Materials](#)

Dr. Edan Lerner
Assistant Professor
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Appointment

The appointment will be on a temporary basis for a period of 4 years (initial appointment will be for a period of 18 months and after satisfactory evaluation it can be extended for a total duration of 4 years) and should lead to a dissertation (PhD thesis). An educational plan will be drafted that includes attendance of courses and (international) meetings. The PhD candidate is also expected to assist in teaching of undergraduates.

Based on a full-time appointment (38 hours per week) the gross monthly salary will range from €2,191 in the first year to €2,801 in the last year. The Collective Employment Agreement (CAO) of the Dutch Universities is applicable.