



**Program FYSICA 2019**  
Friday, April 5  
Amsterdam Science Park  
[www.fysica.nl](http://www.fysica.nl)

**Title: Careers session – Valorization**

**Abstract:** You're a physics student and you've probably been told many times that you have a great career path ahead of you. You're smart, you're analytical, every company is fighting to have you. But there is just one thing holding you back... You have no idea what you want to do when you've finished your studies. Do you recognize yourself in this problem? Well fortunately, you're not alone. Year after year the FYSICA student parallel session is there to inform physics students about what's out there after a physics degree. This year, we focus our student session on valorisation, in short making academic knowledge suitable and available for economic or societal utilisation, or how physics can be used in professional life. We have multiple great speakers talking about how physics is used in their careers, hoping to make it clearer to you what's possible with a career in physics.

Convener: Tom Konijn (Natuurkunde Studenten Amsterdam)

Speakers (in order of appearance)

**Title: Physicist, entrepreneur, or both?**

Davide Iannuzzi (VU)

**Abstract:** Physicists are under pressure. Funding agencies and society at large are pushing us not only to explain what we do in simple terms, but also to make an extra effort to bring our discoveries to the taxpayers via entrepreneurial initiatives that we are often not very comfortable with. In this talk, I will first provide an overview of the obstacles that make this effort particularly painful. Taking inspiration from the Demonstrator Lab in Amsterdam, I will then propose a few measures that academic institutes can implement to comply with this pressing request, stressing, among others, the unexpected positive effects that those measures typically generate in students and staff members.

**Title: Improving human health with the force of light**

Rosalie Driessen (LUMICKS)

*How does the energy landscape of a particular protein cause the misfolding that leads to Alzheimer's?  
What causes a DNA repair process to malfunction, leading to breast cancer?*

These are just two examples of fundamental molecular processes that scientists try to unravel using our Dynamic Single-Molecule analysis instruments. LUMICKS' instruments enable, for the first time, analysis of complex dynamic details related to the behaviour and interaction of single molecules. Dynamic single-molecule analysis is rapidly evolving as a mainstream approach in academic and pharma research for the study of DNA-protein interactions, molecular motor activity, and protein folding. LUMICKS is a 4-year-old spin-off from the biophysics department of the Vrije Universiteit in Amsterdam (VU), and now the leading supplier of Dynamic Single-Molecule analysis instruments. We developed our products on the basis of the correlative optical tweezers - fluorescence measurement and imaging technology that was developed at the VU, making use of the fundamental concept of optical tweezers (holding and manipulating objects with light) for which dr. Arthur Ashkin was awarded the Nobel Prize in Physics 2018.

Title: **Nuttige Natuurkunde** (to be translated)

Abstract:

Joost Frenken (ARCNL)

Abstract: Onze maatschappij is doortrokken van de toepassingen van natuurkundig onderzoek. Ons vakgebied is dus maatschappelijk relevant. Toch vormt die relevantie meestal niet de drijfveer voor ons onderzoekers en vaak manifesteert het nut zich pas lang nadat het onderzoek is afgerond en in richtingen die we er aanvankelijk niet mee associeerden. In sommige gevallen wordt fundamenteel, fysisch onderzoek gericht opgezet met een focus op een toepassing. Dergelijk toepassingsgemotiveerd onderzoek kan de basis vormen voor een vruchtbare en inspirerende publiek-private samenwerking. Het Amsterdamse onderzoeksinstituut ARCNL is een bijzonder voorbeeld van zo'n samenwerkingsverband, waarbij de academische partners NWO, UvA en VU intensief samenwerken met het bedrijf ASML om nieuwe kennis te genereren die nuttig kan zijn in het kader van grensverleggende technologie voor het produceren van processor- en geheugenchips. In deze voordracht wordt een overzicht gegeven van de uiteenlopende onderzoeksonderwerpen die in dit kader bij ARCNL worden aangepakt. (to be translated)

Title: ? (to follow)

**Klara Maturova (TNO)**

Abstract: ? (to follow)