


## Full Spectrum Photoplethysmography

Amsterdam UMC, Univ. of Amsterdam, Location Academic Medical Center 

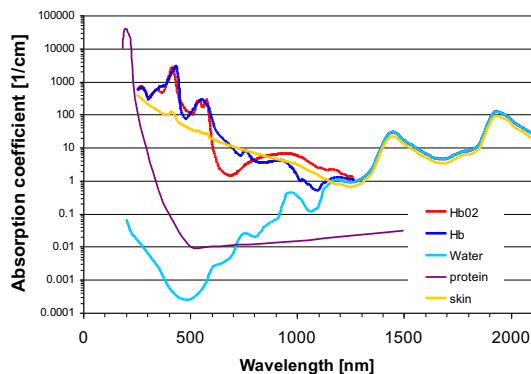
Dept. of Biomedical Engineering and Physics, [www.amc.nl/bmep](http://www.amc.nl/bmep)



*An internship position is available at the Biomedical Engineering and Physics department of the Academic Medical Center (AMC). In our group, new treatment and diagnostic procedures based on innovative physical techniques are developed. Research is performed by a multidisciplinary team that includes physicists, engineers, mathematicians, medical doctors, biologists, and chemists.*

### Background

Photoplethysmography (PPG) is a simple optical technique used to detect volumetric changes in blood in peripheral circulation. It is a low cost and non-invasive method that remotely measures the light absorption at two specific wavelengths (e.g. 660 and 940 nm) to obtain the heartbeat, (changes in) blood volume in the skin and the oxygen saturation of the arterial blood.



### Research description

At the AMC we have started to develop a PPG device that can capture the wavelength range from 800 – 1500 nm. This extended wavelengths range provides the opportunity to obtain more physiological information of the tissue and blood. However, a correct model to interpret the measurements and to relate these to physiological parameters is lacking. The internship involves evaluation and extension of the current models, and/or device development, measurements, and evaluation of the system on volunteers, all depending on the length of the internship.

### Requirements

Bachelor/Master student (physics or engineering sciences) with interest in light tissue interaction, signal analysis, programming. The internship duration can be adjusted according to the curriculum.

### Learning outcome

The student will gain knowledge in the field of light tissue interaction, frequency analysis, programming, human physiological responses. Being part of an interdisciplinary and international research group the student will acquire competences including: collaboration, scientific writing, and presenting scientific findings.

### Contact

Name: Ton van Leeuwen

Email address: [t.g.vanleeuwen@amsterdamumc.nl](mailto:t.g.vanleeuwen@amsterdamumc.nl)