



ETRO  
ELECTRONICS &  
INFORMATICS

## Ph.D. Position in SPAD-Based Integrated Circuit and Image Sensor Design for Direct Time-of-Flight and LiDAR Applications

**Domain:** Integrated circuit design; SPAD technology; image sensors

**Keywords:** direct time-of-flight; LiDAR; automotive and industrial imaging

**Main promotor:** Maarten Kuijk

**Starting date:** 1st of March 2025

**Duration:** four years

**Location:** VUB Etterbeek campus, Brussels, Belgium

**Funding:** ETRO research group

**Direct Time-of-Flight (dToF) and LiDAR technologies** are crucial for enabling precision and robustness in modern automotive and industrial imaging applications. **SPAD** (Single Photon Avalanche Diode) technology is at the forefront of these advancements, offering unique capabilities for photon detection and timing accuracy. However, significant challenges remain in optimizing SPAD-based systems for speed, robustness, and accuracy, particularly under variable environmental conditions.

In this Ph.D. project, you will focus on **the design and development of integrated circuits and image sensors leveraging SPAD technology for dToF and LiDAR systems**. Your research will include the design of novel SPAD-based electronic circuits, the development and characterization of test platforms, and the optimization of sensor performance for real-world applications. The project's application domains include safety-critical automotive systems and precision industrial automation. You will work within the **ETRO research group at VUB**, under the supervision of Prof. Maarten Kuijk, collaborating closely with industrial partners.

The ideal candidate holds an MSc in electrical engineering or a closely related field, or equivalent through experience. Proficiency in **embedded programming** and electronic hardware design, including PCB design, are essential. Experience with **integrated circuit design** and tapeouts are a strong bonus. **Fluency in English**, both written and spoken, is a must.

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