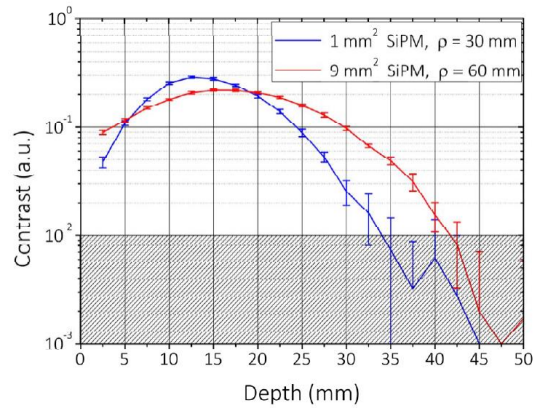


Next generation time-domain diffuse optics system based on high throughput photon counting



Novelty

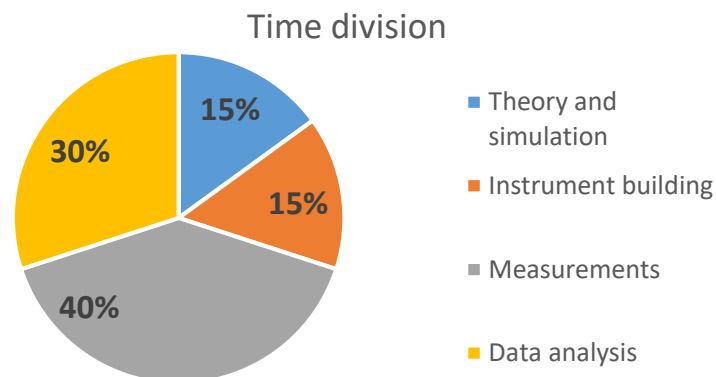
- overcome the single photon statistics bottleneck (→ signal limitations)
- very short integration time (< 10 ms)
- higher depth penetration

Impact on applications

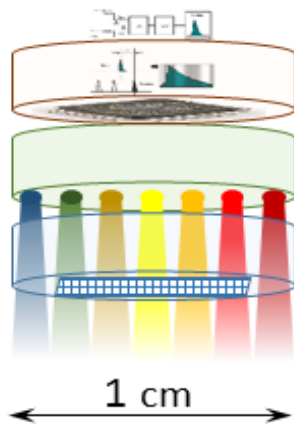
- possible detection of single event brain activation
- possibility to optically probe deep organs (heart, lung, cerebellum..)
- real time tomography

Activity plan

- building and exploring the performances of the new instrument
- application of the instrument in *in-vivo* and/or tomographic measurements



Compact and high-performances optode for fast-gated diffuse optical applications



Integrated time-to-histogram electronics

Multi-wavelength pulsed VCSELs sources

Large area fast gated detectors

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H2020 EU Project

Novelty

- large area (increase of a factor >100 in light harvesting) + fast gated detector
- a complete spectroscopy instrument in a small optode

Impact on applications

- optically probe deep organs (heart, lung...) thanks to the fast gating technique coupled to large area.
- spectral tomography

Activity plan

- exploring the performances of the basic components (e.g. lasers/TDC/detector) and of the single optode
- application in several field (tomography, spectroscopy, *in-vivo* measurements)

