Q.ANT – Particle Metrology based on Photonic Quantum Technologies

Dr. Andreas Schürzinger

Head of Product Line Particle Metrology

February 2023

EPIC Online Technology Meeting on Quantum Metrology and Quantum Sensors

The Q.ANT Vision
We are ...

Q.	**A**	**N**	**T.**
Revolutionizing the	Machines	People	Humans
Quality	**A**nalyze	**N**otice	**T**hink
how	their environment	information and the way	

Quantum Technology meets Photonics
Q.ANT is part of the TRUMPF Group

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Federal Ministry
of Education
and Research

Footprint
>1.600 m²

Q.ANT Team
Today: 65 ➜ 100 (2023)

Product Developments
3 Sensors and 1 Chip

Public Funding
6 Projects

Dr. Andreas Schürzinger | 27.02.2023

Q.ANT will grow towards Quantum Sensing and Quantum Computing
based on strong Enabling Technologies

Particle Metrology

Sensor for analyzing finest particles in gases, liquids and as powders.

- Chemistry, pharma and food processing
- Algae and bacteria analysis
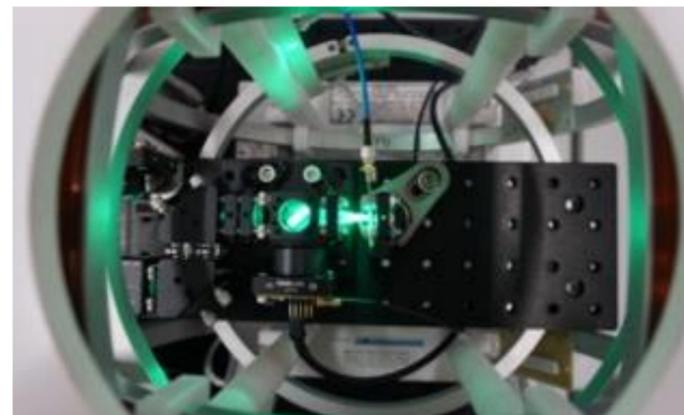- Material characterization

Atomic Gyroscope

Sensor for stabilization and localization of systems

- Satellite leveling
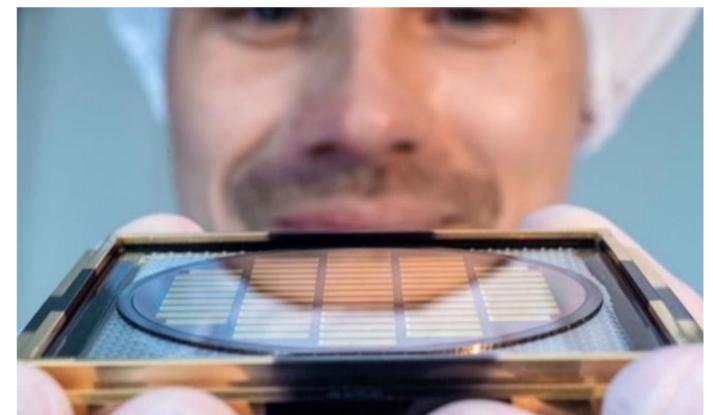- Indoor Automated Guided Vehicle (AGV) Localization

Magnetic Sensing

Sensor for measuring finest signals in magnetic fields.

- Prosthesis control by neuronal signals
- Outdoor Automated Robotic Localization
- Human–Machine Interface

Photonic Computing

Photonic Chips and Computing for solving complex algorithms

- Quantum Computing
- Complex Optimization
- Neuromorphic Computing

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Particle Shape recognition based on Photonic Quantum Technologies
Particle Sensor Q.P05

Evaluation Kits	Market Availability April 2023 Pittcon Trade Show Philadelphia
Parameters	Size, Velocity, Position → Shape
Particle Size	0,5 – 700 µm
Media	Liquids / Gases / Powders
Roadmap	Shape Classification Projects Q4/23 Online, ATEX Versions Q3/24

Customized shape recognition algorithms for a variety of applications
Camera–free shape recognition allows process control at unprecedented speed

Bioreactor UseCase

Sphericity measurement
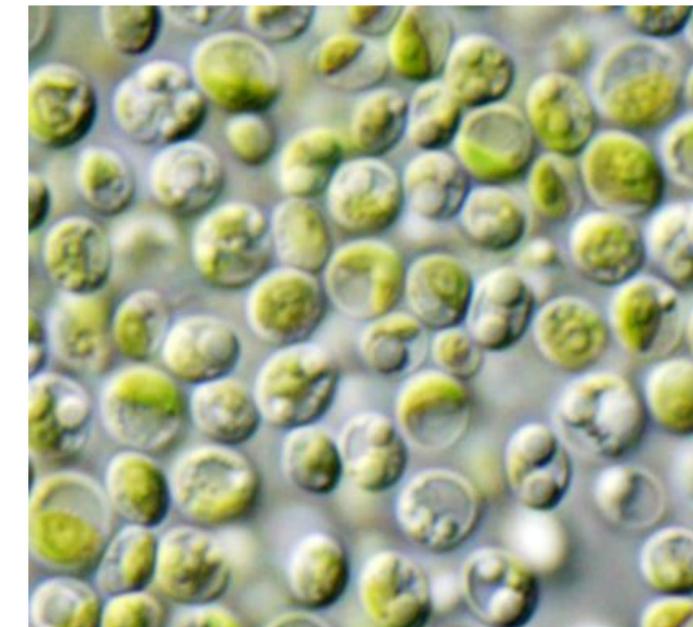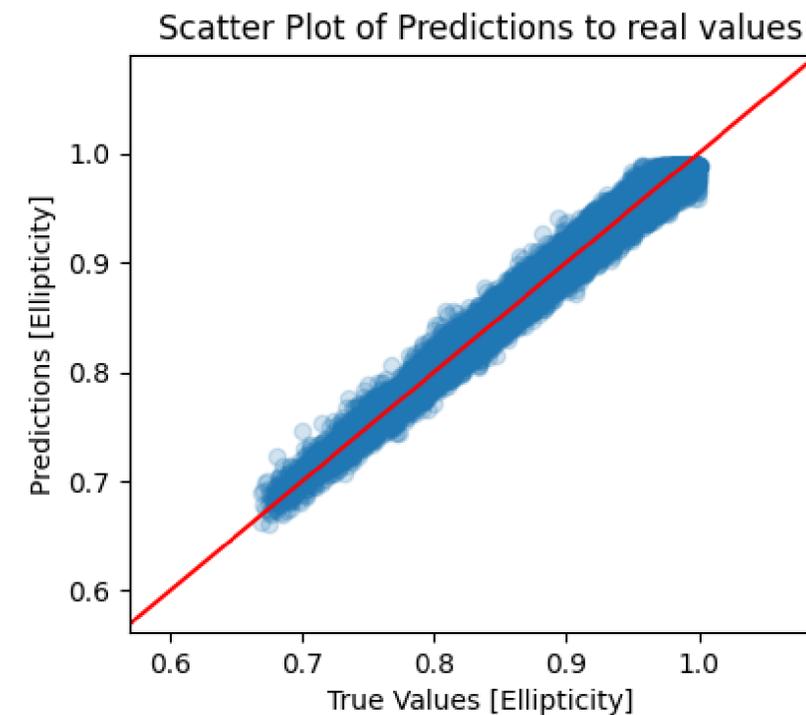
Elliptical   Round

Scatter Plot of Predictions to real values

Cell analysis

Viable   Dead