- +447826091610
  - London 🕻
- scholar.google.com/citations? 🕅 user=0BuGEW4AAAAJ&hl=en
- linkedin.com/in/siva-pradyumna in

## WORK EXPERIENCE

#### **Higher Research Scientist**

#### National Physical Laboratory

05/2021 - Present

#### Project

PhD

- Assurance of Quantum Random Number Generators (QRNGs)
- Testing and characterizing commercial QRNGs based on vacuum homodyne and Poissonian based sources

Siva Pradyumna Tekuru

• Exploring the possibilities of side-channel attacks on vacuum homodyne based QRNGs

## Post Doctoral Research Associate

#### University of Oklahoma

12/2019 - 05/2021

Project

Norman, US

- Control of quantum spatial correlations with structured pump in bright quantum correlated twin beams.
- The bright twin beams were produced via Four wave mixing using hot Rb-vapor cell as non linear medium
- We were able to demonstrate that it is possible to encode information in the distribution of the spatial correlations of twin beams by taking advantage of their dependence on the angular spectrum of the pump
- Worked also on the theory of Four wave mixing and tried to model the spatial correlations distributions based on numerical techniques in the high gain regime approach as well as schmidt mode decomposition approach

Supervisor : Dr. Alberto Marino

## SKILLS:

Matlab- Signal Processing Toolbox, Statistics toolbox, Image Processing toolbox

Python -numpy,pandas, matplotlib, scikitlearn,tensorflow keras Mathematica, Labview, C, LaTex, SQL

Locking of Cavities and Interferometers

## PUBLICATIONS

#### Journal

#### Information encoding in the spatial correlations of entangled twin beams

*Author(s)* G Nirala, Siva T Pradyumna, A Kumar, AM Marino *2023/6/2* Science Advances

#### Journal

#### Twin Beam Quantum enhanced Correlated Interferometery

Author(s) Siva T Pradyumna, E Losero, I Ruo-Berchera, P Traina, M Zucco, CS Jacobsen, UL Andersen, IP Degiovanni, M Genovese, T Gehring 2020/6/2 Communications Physics, Nature

#### Journal

## Photon-number correlation for quantum enhanced imaging and sensing

Author(s) Alice Meda, Elena Losero, Nigam Samantaray, Fabio Scafirimuto, Siva Pradyumna, Alessio Avella, Ivano Ruo-Berchera, Marco Genovese 2017/8/11 Journal of Optics

#### Journal

## Manipulation of entanglement sudden death in an all-optical setup

*Author(s)* A Singh, S Pradyumna, ARP Rau, U Sinha *2017/3/1* JOSA B 34 (3), 681-690

## **EDUCATION**

#### PhD: Quantum Metrology Istituto Nazionale Ricerca di Metrologica(INRIM)

11/2015 - 06/2019

Thesis (Supervisor- Dr. Marco Genovese, Dr.Ivano Ruo-Berchera)

• An application of quantum metrology: enhanced correlated interferometry http://hdl.handle.net/11 583/2736764

 My PhD project was on using Twin-beam states and squeezed states to enhance the sensitivity

Italy

• We were able to demonstrate experimentally the advantage of using quantum light (squeezing and bipartite correlations) in an interferometric system composed by two Power Recycling Interferometers whose outputs are jointly measured.

# of interferometers.

## Visiting PhD

#### Technical University of Denmark(DTU)

#### 08/2016 - 06/2018

Project( Co-Supervisor: Prof. Ulrik Andersen, Dr. Tobias Gehring )

 Experimental guantum enhanced correlated interferometery with quantum states of light

## **Research Assistant**

## Raman Research Institute

#### 08/2014 - 10/2015

#### Project(Supervisor: Dr. Urbasi Sinha)

• Manipulation of **Entanglement Sudden** death in an all optical setup

#### **Master Thesis** Institut Non Linéaire de Nice

## 01/2014 - 07/2014

#### Thesis Supervisor(Dr. William Guerin)

Polarization measurements on scattered light of Rubidium vapor cell

### MSc(Hons). Physics+ B.E.(Hons). Civil

Birla Institute of Technology and Science, Pilani

07/2009 - 07/2014

GPA: 8.2/10

## PUBLICATIONS

#### Journal

#### Quantum enhanced correlated interferometry for quantum gravity tests: the experimental set-up and the locking scheme

Author(s)

ST Pradyumna, E Losero, P Traina, I Ruo-Berrchera, I Degiovanni, M Zucco, M Genovese Date of Publication 2019/09/01

Journal of Physics

#### Conference

#### Complete control of spatial correlations in quantumcorrelated twin beams Author(s)

Gaurav Nirala, Siva T. Pradyumna, Ashok Kumar, and Alberto M. Marino Date of Publication 2022

American Physical Society

#### Journal

#### Toward a quantum enhanced holometer: preliminary results of a power-recycled 2D optical cavity at INRIM

Author(s

E Losero, S Pradyumna Tekuru, F Saccomandi, M Zucco, P Traina, I Ruo-Berchera, I Degiovanni, M Genovese Date of Publication 2019/3/1

SPIE

## CONFERENCES

#### Photon 2022 (09/2022)

Oral talk

 Metrology to test and evaluate continuous variable QRNG and QKD hardware

#### Quantum Showcase(11/2021)

Conference/Issuer of the certificate

 Participated in the event to showcase our quantum random number generator

#### Photon 2020 (09/2020) Oral Talk

Towards the control of spatial quantum correlations

#### Quantum 2019, Torino (05/2019)

#### Poster Presentation

Quantum enhanced correlated interferometery

#### IQIS, Catania , Italy (10/2018)

Poster Presentation Quantum enhanced correlated interferometery

#### CEWQO, Lyngby, Denmark (06/2017) Poster Presentation

Towards the quatum enhanced holometer

#### Quantum (05/2017)

#### Poster Presentation

Towards the guatum enhanced holometer

#### Quantum and Non Linear Optics 2017 - Summer School (06/2017)

DTU