Interferometric stabilisation of a fibre-based optical computer

Experimental study

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Outline

Introduction

- The development of next generation technological computation paradigm is investigated
- Optical computers use light as information carrier $\longrightarrow$ *fast*
- Optical computers do not need to rely on boolean logic as classical computers do, new computation paradigms based on specific physical properties of light can be implemented
- *Photonic reservoir computing* is one of such implementation

Outline

Artificial neural network

Reservoir computing

Mathematical model

Photonic reservoir computing

Numerical simulations

Outline

Working princinple

Frequency coupling of the neurons

Mathematical model

Outline

Interferometry

Experimental setup

Transfer function of the cavity

Classical cavity stabilisation

Pound-Drever-Hall technique

Pound-Drever-Hall technique for the reservoir cavity

Cavity stabilisation performances

Results

Outline

Erratum

Conclusion

References