

# Chapter 6

## *Applications of Mach-Zehnder interferometers*

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### 6.1) Introduction

### 6.2) Z-transform description of MZIs

### 6.3) Loss and manufacturing variations

### 6.4) Tuneable couplers by means of symmetrical MZIs

### 6.5) Lattice filters by means of asymmetrical MZIs

*6.5.1) Recursion formula and synthesis algorithm*

*6.5.2) MZI design for lattice filters*

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### 6.6) Simulation: Tuneable MZI coupler

### 6.7) Simulation: MZI lattice filters

*6.7.1) Arbitrary example*

*6.7.2) Erbium gain equalisation filter*

*6.7.3) Generalised lattice filters*

### 6.8) Conclusions

### 6.9) References

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