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薄膜技术

DWDM极窄带干涉滤光片的误差与自动补偿效应

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摘要 针对现代光通信中的核心元件之一--密集型波分复用(DWDM)系统中极窄带光学薄膜干涉滤光片的指标要求,提出采用基于四分之一波长的规整膜系是实现密集型波分复用功能的最佳选择.对给定的设计方案的各个膜层的误差灵敏度分布、特定膜层的误差成因进行了分析,并对多个膜层进行了随机分布的误差模拟.通过对直接极值法监控中不同误差的补偿机理的研究,指出采用直接极值法监控是目前为止镀制这种滤光片的有效方法.最后讨论了可能存在的两种系统误差.

关键词 DWDM 干涉滤光片 误差补偿 导纳轨迹

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Effect of Error Auto-compensation and Error of the Extremely Narrow-band Interference Filter in DWDM System

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Abstract Based upon the specifications of the extremely narrow-band interference filters in DWDM systems, it is indicated that application of λ_0/4 regular thin film assemble is the most optimal choice in production of such filters. Also, the different layer sensitivity distrbution and the error created in specific layers are analyzed, and random error simulation for several layers is given. Through the investigation into error compensation mechanism in direct turning point monitoring method, it is pointed out that turning point method is up to date the effective way to manufacture such filters, and two types of possible systematic errors are discussed in the end.

Key words DWDM interference filter error compensation admittance locus

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