论文

Zemax与Matlab动态数据交换及其应用研究

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摘要：

为了将Zemax的光学系统设计和分析功能与Matlab强大的矩阵计算和数据分析功能很好地结合起来，对Matlab和Zemax的DDE（dynamic data exchange 动态数据交换）通信技术进行了研究，并将其应用于计算机辅助调腔技术的数值模拟过程中。通过动态数据交换完成Matlab对Zemax的控制，实现了二者之间的数据传递，即在Matlab的控制下，实现对光学系统结构的改变，并获取输出光束的Zernike多项式系数值，从而大大方便后续数据处理工作。同理，其逆过程可以将计算得到的结果反馈到光学系统中，用于系统优化。二者的动态数据交换技术可提高研究过程中数据的可靠性和工作效率。

关键词： 计算机辅助设计 Zemax软件 Matlab软件 动态数据交换 光学设计

Dynamic data exchange between Zemax and Matlab

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Abstract:

In order to successfully combine Zemax's functions of the optical system design and analysis with Matlab's powerful ability on the matrix calculation and data analysis, the communication technique of DDE(dynamic data exchange) between the two softwares was researched and applied to the numeric simulation process of the computer-aided resonator alignment. The control of Matlab to Zemax was implemented through DDE and the data transmission between the two softwares was realyzed. In other words, under the cantrol of Matlab, the structure of the optical system can be rectified, and it is easy to get a series of values of Zernike polynomial coefficients of the output beam. So it is convenient for the following data process. In the same way, the calculation results can be sent to Zemax as a feedback of the optical system optimization. Data reliability and work efficiency can be improved in this way. DDE technique between Zemax and Matlab is very helpful in the field of optical system design and optimization.

Keywords: computer-aided design Zemax Matlab dynamic data exchange optical design

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