

光學量測研究室 (Optical Metrology Lab)

指導教授：蔡忠佑

團員介紹

大學專題生	碩士班研究生	博士班研究生
陳俊豪	卓祐新	
陳兆佑	林曜淳	
黃政傑	馮偉建	

研究方向

歪斜光線追蹤、靈敏度分析、光學儀器設計、光學量測、光學系統成像品質分析等。

近五年(94~98)內國科會計畫

1. 應用歪斜光線追蹤於反射式光學穩定系統之分析與設計。
(NSC 97-2218-E-150-004-)
2. 應用歪斜光線追蹤法於光學系統的焦散面與模糊圓之分析建模及最佳化設計。(NSC 98-2221-E-150-021-)

近五年(94~98)內產學合作計畫

研究成果：

A. 期刊論文：

1. **C. Y. Tsai*** and P. D. Lin, "Prism design based on image orientation change," *Applied Optics*, **45**, pp. 3951-3959, 2006. (SCI, IF=1.717, Rank=13/55)
2. **C. Y. Tsai*** and P. D. Lin, "Analytical solutions for image orientation changes in prisms," *Applied Optics*, **46**, pp. 3087-3094, 2007. (SCI, IF=1.701, Rank=17/64)
3. P. D. Lin* and **C. Y. Tsai**, "First-order gradients of skew rays of axis-symmetrical optical systems," *Journal of the Optical Society of America A*, **24**, pp. 776-784, 2007. (SCI, IF=1.776, Rank=15/64)
4. **C. Y. Tsai*** and P. D. Lin, "The determination of positions and orientations of a prism's surfaces based on image orientation change," *Applied Physics B - Lasers and Optics*, **91**, pp.105-114, 2008. (SCI, IF=2.167, Rank=13/64)
5. **C. Y. Tsai***, P. D. Lin, and Y. L. Lo, "Prism design for image orientation changes by screw triangle method," *Optics Letters*, **33**, pp. 1081-1083, 2008. (SCI, IF=3.772, Rank=4/64)
6. P. D. Lin* and **C. Y. Tsai**, "General method for determining the first order gradients of skew rays of optical systems with non-coplanar optical axes," *Applied Physics B - Lasers and Optics*, **91**, pp. 621-628, 2008. (SCI, IF=2.167, Rank=13/64)
7. **C. Y. Tsai*** and P. D. Lin, "Design of Optically Stable Reflector Systems and Prisms," *Applied Optics*, **47**, pp. 4158-4163, 2008. (SCI, IF=1.763, Rank=18/64)
8. P. D. Lin* and **C. Y. Tsai**, "Skew ray tracing and sensitivity analysis of ellipsoidal optical boundary surfaces," *Applied Mathematical Modelling*, **32**, pp. 2526-2537, 2008. (SCI, IF=0.931, Rank=25/68)
9. **C. Y. Tsai*** and P. D. Lin, "The mathematical models of the basic entities of multi-axis serial orthogonal machine tools using a modified Denavit-Hartenberg

notation," International Journal of Advanced Manufacturing Technology, **42**, pp. 1016-1024, 2009. (SCI, IF=0.743, Rank=22/38)

10. **C. Y. Tsai***, "A general calculation of the 3-D disk of least confusion using skew ray tracing," Applied Physics B - Lasers and Optics, **96**, pp. 517-525, 2009. (SCI, IF=2.167, Rank=13/64)

B. 研討會論文:

1. **C.Y. Tsai**, C. K. Sung, P. D. Lin, K. F. Ehmann, "A new camera calibration method and its applications, Proceedings of ICAM2005: 2005 International Conference on Advanced Manufacture", pp. I011, 2005
2. **蔡忠佑**、林昌進, "矩陣分解法於稜鏡設計之應用", 中國機械工程學會第二十二屆全國學術研討會, E4-005, pp. 532-538, 2005。
3. **蔡忠佑**、宋旗桂、薛鈞哲、林昌進, "稜鏡成像位姿變化之分析建模與設計", 中國機械工程學會第二十三屆全國學術研討會, E4-011, pp. 90-95, 2006。
4. 宋旗桂、**蔡忠佑**、林昌進、林毅欽, "近軸光線之照像機校正", 中國機械工程學會第二十三屆全國學術研討會, E4-016, pp. 120-125, 2006。
5. **蔡忠佑**、薛鈞哲、鍾明志、林昌進, "稜鏡成像位姿設計之解析解", 中國機械工程學會第二十四屆全國學術研討會, E09-0010, 2007。
6. 薛鈞哲、**蔡忠佑**、鍾明志、林昌進, "近軸光線矩陣追蹤法於三維光學系統之分析與設計", 中國機械工程學會第二十四屆全國學術研討會, E09-0013, 2007。
7. **蔡忠佑**、薛鈞哲、林昌進, 應用Right-angle 及Roof 稜鏡取代單一稜鏡成像之設計, 中國機械工程學會第二十五屆全國學術研討會論文集, CSME25-74, 2008。
8. 薛鈞哲、**蔡忠佑**、林昌進, 幾何光學的光程梯度計算與應用, 中國機械工程學會第二十五屆全國學術研討會論文集, CSME25-95, 2008。