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器件物理及器件制备技术

基于液体变焦透镜离焦补偿机构的设计

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摘要: 为了减小人眼离焦像差对液晶自适应光学视网膜成像系统的过大压力,设计了一种基于液体变焦透镜的离焦补偿机构。该离焦补偿机构能连续调焦,且无需任何组件平移运动,有利于小型化。根据该液体透镜的曲率压变的变焦原理,选择适当传动比的蜗杆传动作为旋转进动“放大”机构,放大了外压环旋转角度与屈光度的对应关系,设计出步长为0.2D的离焦补偿机构,为液晶自适应光学视网膜成像系统的高对比度成像提供了保障。

关键词: 离焦 液体变焦透镜 屈光度 液晶自适应系统 蜗杆传动

Design of Defocus Compensate Mechanism Based on Liquid Lens

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Abstract: To decrease the influence of defocus on liquid crystal adaptive optics system, improve the imaging quality, a mechanism for defocus compensate has been designed. The mechanism was based on liquid lens, which can change the focal length continuously without any moving part. In order to design the adjust mechanism reasonably, calculation have been taken on the relationship between the rotation angle of the outer ring and the deflection of film center. Then 0.2 diopter is chosen as the division value. The parameters of the mechanism were based on relationship between the rotation angle of the outer ring with deflection of film center and the division value. It shows a good performance in liquid crystal adaptive optics system.

Keywords: defocus liquid lens diopter liquid crystal adaptive optics system worm screw

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