

4. Conclusion

In conclusion, we have proposed an optical dimer constructed from a conventional Luneburg lens and a pseudo Luneburg lens, whose profile index was computed with the use of the implicit integral equation. Then we performed the method of force tracing on the two lenses and calculated the optical force fields along the ray trajectories inside the lenses. Based on the obtained force profiles, we studied the dynamics of the opto-mechanical interaction of lenses under the illumination of a collimated light beam and showed how the combination of lenses forms the dimer. We also studied the stability of dimer and we showed that the existence of a restoring force leads to the dimer self-correcting small lateral misalignment. Finally, as a suggestion for the future work we should add that the presented work can constitute a first step towards designing the light-driven alignment and self-aligned optical systems.

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