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Nota di contenuto	Introduction -- Physical Background -- Fermat Principle and Snell's Law of Refraction -- Ray Equations: Geodesics in Finsler Space -- Aberrations and a Lens Design Problem -- The Challenge of Absolute Instruments -- Conclusions and Outlook -- Appendix -- References.
Sommario/riassunto	This book fills a gap in mathematical literature and attracts focus to liquid crystals for freeform lens design. It provides a rigorous mathematical perspective on liquid crystal optics, focusing on ray tracing in the geometric optics regime. A mathematical foundation is set to study lens design and ray tracing problems in liquid crystals. Additionally, it addresses absolute instruments, which cannot be designed through transformation optics and, until recently, only a handful of examples were known. Mathematically, this is a largely untapped area of research, yet the applications are profound. Finally, the book describes several open directions, revealing the richness of the intersection of liquid crystal optics and mathematical analysis. The content of this book will prove invaluable for researchers of mathematical optics as well as those interested in liquid crystal theory, in addition to those mathematics graduate students aiming to

understand the physical basis of light propagation in liquid crystals.