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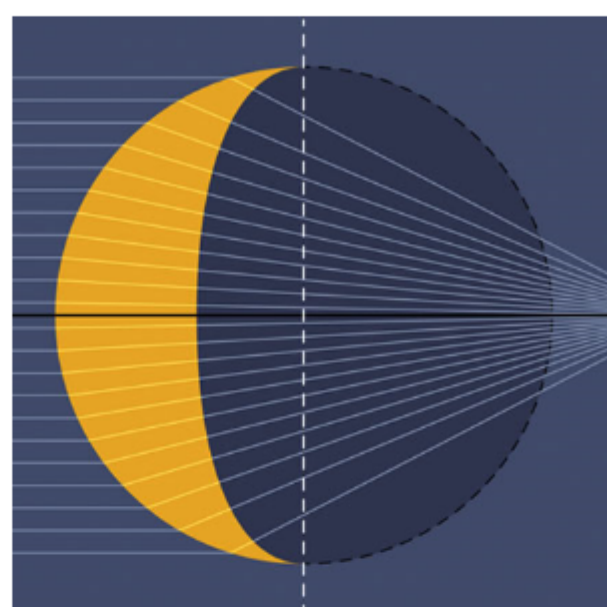
Stigmatic Optical Imaging: The Past, Present, and Future

Tuesday, August 22, 2023 1:00 PM - 2:00 PM EDT

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.: About This Webinar

The exact equation to design a stigmatic lens has recently been discovered and extensively studied. This equation allows researchers to explore several stigmatic optical systems and shows that these systems share several properties. In this presentation, Rafael González-Acuña of Huawei Technologies reviews those properties, starting from the history of the problem in ancient Greece to its solution that was published in 2018. He reviews that solution step by step and explores the mathematical details. The derivation does not need paraxial approximations, numerical approaches, or optimization, because it is singularly based on Fermat's principle. It is a close-form analytical equation. González-Acuña focuses on the properties of the equation, such as mention continuity, homeomorphism, limitations, stability, and most importantly the uniqueness theorem of stigmatism. He shares about the generalization of the equation to systems with an arbitrary number of lenses, mirrors, and both on-axis and off-axis freeform systems or aplanatic systems. Finally, he touches on the implications of the solution in the general equation adaptive mirror and comments on future research around this equation.



Who should attend:

Optical engineers and all those working with optics who are interested in gaining further understanding of stigmatic optical imaging. Engineers, researchers, and R&D scientists who work with or design optical imaging tools and stigmatic lenses. Those who work with cameras, imaging, machine vision, microscopy, astronomy, or metrology. Professionals who purchase lenses and optical components.

About the presenter:

Rafael G. González-Acuña, Ph.D. is a lens designer for Huawei Technologies. He earned both a bachelor's degree in physics from the Tecnológico de Monterrey and a bachelor's degree in mathematics from Universidad Abierta y a Distancia de México. He earned his master's degree in optomechanics at Centro de Investigaciones en Óptica, A.C. and his doctorate in optics from Tecnológico de Monterrey. His doctoral thesis focused on the design of free spherical aberration lenses. González-Acuña is a co-author of the solution to designing bi-aspheric singlet lenses free of spherical aberration. He has won several international awards and scholarships and has co-authored 35 papers on lens design, as the first and corresponding author.

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