An Optical Design Approach to Dispersion Engineering Joseph N. Mait, MITRE June 10th, 2022, 9-10am PT Zoom link: https://washington.zoom.us/j/92272027087

The objective of optical design is to define the geometric shape of materials that transform and extract information in a scene. For most of optical design's history, the scale of element geometry ranged from millimeters to meters. Advances in fabrication technology have driven the lower end to scales comparable to visible wavelengths. Thus, it is now possible not only to vary an element's index of refraction spatially, but its dispersion as well. However, most tools for dispersion engineering are based on rigorous electromagnetic theory, which is not the conventional language of optical designers. I present my attempt to develop an approach to dispersion engineering that is congruent with conventional optical design.

<u>Biography:</u> Dr. Mait currently works part-time for MITRE and as an adjunct professor for the Institute of Optics at the University of Rochester. He retired in 2018 from the U.S. Army Research



Laboratory after 30 years of federal service. As ARL's Chief Scientist from 2013 to 2017, he was responsible for the laboratory's technical forecasting and strategic vision. He has held visiting positions at the Universität Erlangen-Nürnberg, Germany, the National Defense University in Washington DC, and the Leibniz Institute for Photonic Technologies in Jena, Germany.

Dr. Mait received his BSEE from the University of Virginia in 1979 and his MSEE and PhD from the Georgia Institute of Technology in 1980 and 1985, respectively. His research interests include surface

optics, graded-index optics, and computational imaging, a field of imaging he helped define in the 1990s. For six years he also led ARL's program on micro-autonomous systems and technology. From 2009-2015, he was Editor-in-Chief of Applied Optics. He is a Fellow of SPIE and OSA, and a senior member of IEEE.