

# Nathaniel Dene Hoffman

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## Education

**Carnegie Mellon University**  
Ph.D., Physics, 2019–Present.  
Field: Nuclear and Particle Physics  
M.S., Physics, 2021.

**Case Western Reserve University**  
B.S., Physics, 2019.  
B.A., Music, 2019.

## Research

**Department of Physics, CMU**  
Research Assistant (Advisor: Reinhard Schumacher)  
Project: Investigating Light Mesonic Resonances  
in  $K_S^0$  Pair Photoproduction at GlueX, 2019–Present

**Department of Physics, CMU**  
Research Assistant (Advisor: Michael Widom)  
Project: Cluster Variation Method Analysis of BCC Heusler Alloys, 2020

**Department of Physics, CWRU**  
Research Assistant (Advisor: Giuseppe Strangi)  
Project: Material Properties and Fabrication of  
Thin-Film Metamaterials, 2016–2019

## Teaching

**Department of Physics, CMU**  
Teaching Assistant, Basic Experimental Physics, 2019–2020

**Department of Physics, CWRU**  
Teaching Assistant, Honors Introduction to Electromagnetism, 2017–2019

## Awards and Fellowships

**Michelson-Moreley Scholarship**  
CWRU, 2015–2019

## Languages and Skills

English (native), French (intermediate), Spanish (beginner)  
Python, C/C++,  $\LaTeX$ , Mathematica, ROOT

## Hobbies

Violin, Piano, Gardening, Skiing, Cooking, & Baking

## Publications

ElKabbash, M., et al. (2022). *Fano Resonant Optical coatings platform for Full Gamut and High Purity Structural Colors*. In Review: arXiv:2208.03777.

ElKabbash, M., et al. (2021). *Fano-resonant ultrathin film optical coatings*. *Nature Nanotechnology*, 16(4), 440–446. DOI: 10.1038/s41565-020-00841-9

Hoffman, N., & Widom, M. (2021). *Cluster variation method analysis of correlations and entropy in BCC solid solutions*. *Metallurgical and Materials Transactions A*, 52(5), 1551–1558. DOI: 10.1007/s11661-021-06182-z

ElKabbash, M. et al. (2020). *Ultrathin-film optical coating for angle-independent remote hydrogen sensing*. *Measurement Science and Technology*, 31(11), 115201. DOI: 10.1088/1361-6501/ab9fd8

ElKabbash, M., et al. (2017). *Iridescence-free and narrowband perfect light absorption in critically coupled metal high-index dielectric cavities*. *Optics letters*, 42(18), 3598–3601. DOI: 10.1364/OL.42.003598

ElKabbash, M., et al. (2017). *Tunable Black Gold: Controlling the Near-Field Coupling of Immobilized Au Nanoparticles Embedded in Mesoporous Silica Capsules*. *Advanced Optical Materials*, 5(21), 1700617. DOI: 10.1002/adom.201700617

## Talks

April 17, 2023—Photoproduction of Mesons Decaying into  $K_S K_S$  at GlueX  
APS April Meeting

April 16, 2023—GlueX/Hall D Overview  
APS Jefferson Lab Users Organization Meeting

October 14, 2021—Meson and Baryon Photoproduction using  
 $\gamma p \rightarrow K_S K_{Sp}$  at GlueX  
APS Division of Nuclear Physics

## Work Experience

### **Engineer at Folio Photonics**

Activities included data reading/writing experiments on multilayer films and developing software for testing and automation, 2019

## References

Dr. Reinhard Schumacher  
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Carnegie Mellon University  
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Dr. Curtis Meyer  
Department of Physics  
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Dr. Giuseppe Strangi  
Department of Physics  
Case Western Reserve University  
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Dr. Mohamed ElKabbash  
Quantum Photonics Group  
Massachusetts Institute of Technology  
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