

Osku Kempainen, Ph.D.
Research Assistant Professor
Department of Physics
Kansas State University
Tel: (+1) 785 491 1828
Email: okemppin@phys.ksu.edu

October 29, 2018

Physics Faculty Search Committee
Texas Tech University
Physics & Astronomy Department
Box 41051
Lubbock, TX 79409-1051

Dear Search Committee,

I am writing to apply for the position of Assistant Professor at Texas Tech University. Currently, I am a Research Assistant Professor at Kansas State University, a position I have held since January 2018. Previously, from September 2016 to January 2018 I was a Postdoctoral Associate at KSU. Before that, I was a graduate student at Aalto University, Finland, where I received my Ph.D. from in May 2016, with a dual appointment as a Research Scientist at Finnish Meteorological Institute. I also received my M.Sc. and B.Sc. from Aalto University, in 2011 and 2010, respectively.

My research exists in the interface of experimental and computational electromagnetic scattering of condensed matter, with a focus in aerosol particles. I also have extensive experience in the field of Martian atmospheric science. Specifically, I was part of the team that built the relative humidity sensor for Mars Science Laboratory. This dual nature of my previous work is reflected in my scientific productivity being split into two separate areas. Currently I have 39 peer-reviewed articles, a book chapter, and a U.S. patent application.

At KSU I have built a portable digital holographic imager for large aerosol particles. Digital holography is an emerging technology that allows for simultaneous recording of the phase and the amplitude of the scattered light wave. This contains significantly more information on the particle than conventional intensity imaging and can be used to extract three-dimensional information on images taken with a single nanosecond-length laser pulse. Having expertise in both the experimental and computational aspects of electromagnetic scattering allows me to form a comprehensive understanding of the physical phenomena I'm studying, as well as giving me a wide variety of tools available for the work. This, I feel, makes me a very strong candidate for the position at University of Washington.

At Texas Tech University I would build a experimental condensed matter electromagnetic scattering research program, centered on digital holography and including table-top measurements and *in situ* experiments. I thank you for your consideration of my application for the position of Assistant Professor of Physics. I have included my C.V., a statement of research, as well as three confidential letters of reference.