I am an experimental astrophysicist with a strong background and interest in computational and mathematical methods. I currently spend most of my time developing new algorithms for the Active Optics System of the Large Synoptic Survey Telescope, which will help us better understand dark matter and dark energy. I also have developed a new experimental technique, star trail photometry, that provides a unique combination of time resolution and sky throughput. We will use this technique to carry out the first survey searching for short duration stellar variability. Probing this frontier can constrain a wide range of astrophysical phenomena ranging from theoretical models of Kuiper belt objects in our solar system to prompt optical emissions from extragalactic gamma-ray bursts.

**Searching for Subsecond Stellar Variability with Wide-field Star Trails and Deep Learning**

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