

Dear Hiring Manager,

I am a PhD Candidate at Caltech studying computational astrophysics and I would love to merge my skills as a physicist and software engineer with my love of cinema and computer graphics in a software development internship at WētāFX. I have always admired the art of animation and VFX. Specifically, I was enamored by the realistic interaction of water with both CG and physical elements in Avatar: The Way of Water. It left me wondering whether I could someday contribute to making such stunning visuals. I believe my experience as a researcher, developer, collaborator, and physicist have provided me with an extensive and versatile toolkit that can be directly applied to the work done at WētāFX. After my PhD I intend to pursue a career that combines my love of physics and cinema. An internship in this field will give me valuable insight into the current work and potential career opportunities.

I am currently a lead developer of SpECTRE; an open-source multi-scale multi-physics software package. SpECTRE solves Einstein's equations of gravity using exascale supercomputers to simulate collisions of black holes and compact stars. I developed and adapted several feedback control systems required for the simulations within an asynchronous runtime system. Ultimately, this improved the performance of SpECTRE by tying into the dynamical load balancing and scaling efficiency of the code.

In addition to technical challenges, my work over the last six years was in highly collaborative research environments with international collaborators from seven top-tier research institutions. To cement myself as a valued member of our team, I learned how to "lead up the chain of command" which has allowed me to be the project manager for the black hole simulations. I am responsible for coordinating meetings, evaluating and adjusting task priorities, and ensuring seamless integration of software components. I am particularly proud that the combination of my hard work, technical knowledge, and collaborative skills allowed me to become a lead developer of SpECTRE in less than 2 years.

I am confident that my technical skills as a software engineer and physicist along with my interest in 3D modeling software and algorithms would be a valuable addition to the team at WētāFX. I am excited by the opportunity to apply myself to problems that combine my passion for software development, physics, and the art of animation and VFX. I would love to learn more about potential opportunities at Wētā and I look forward to your response. Thank you for your time and consideration!

Sincerely,
Kyle Nelli