

Dear Sir/Madam,

I am so excited to apply for the PsiQuantum internship quantum architecture position! I am in my second year of my Master's degree in mathematics and I am researching quantum computational models with photonics. This opportunity is perfect for me, as I will be able to apply all the experience I've gained during my studies as well as gain new, important knowledge about the field.

My research can support the fact that I am driven by quantum computations. I researched use cases for quantum algorithms; I researched the effect of noise on quantum algorithms; I researched quantum entangling transformations with the KLM protocol. I believe in the advantage that quantum computers will bring. That is why I am sure that I will be a great fit for PsiQuantum and why this is a crucial step in my career.

I have an undergraduate degree in computer science and want to incorporate my programming skills into my work as much as possible. My recent project, "Strawberry Fields Composer" showed me the intricacies of encoding quantum light with nonlinear elements. I used several engines to simulate quantum systems and analyzed differences in these approaches. This experience will be useful for my work on optical architecture direction at the PsiQuantum internship.

My usual approach to solving scientific problems is to look at a problem on a smaller scale. First, solve an easy exercise on the lower dimensions and then generalize to the higher dimensions. For that purpose I usually code the simulation of a problem, get all possible answers, and try to see the pattern. That is also my main motivation for the "Strawberry Fields Composer" project, as it provides exactly such a tool for linear and nonlinear optics.

To sum up, this internship is the greatest opportunity of my life, and I hope to be helpful in our future work!

Yours faithfully,

**Ivan Ogloblin**