

PHYSICS
ARTS AND SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 03/01/2023

PROJECT TITLE: Improving Optimization Algorithms for Fitting Large Data Sets

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Project Description

Although unbinned maximum likelihood fits have been used for analyzing particle physics data for more than 50 years, re-engineering the underlying code should allow non-expert end-users to increase their speed of execution by factors of 10 or more. The context for this project will be the GooFit package developed over the past 10 years. It is GPU-friendly, but also runs effectively on multi-core CPU servers. This project will require that the student has prior knowledge of probability and statistics comparable to an introductory course in the subject, some knowledge of multi-dimensional calculus, and programming experience at the level of an introductory course in either C++ or Python. No physics background is required.