

Implementing Fast Multipole Methods with High Level Interpreted Languages

Srinath Kailasa

Department of Physics & Astronomy
University College London

September 8, 2020

Table of Contents

Fast Multipole Methods (FMMs)

PyExaFMM

Research Context

Table of Contents

Fast Multipole Methods (FMMs)

- Motivation

- Analytic FMM

- Kernel Independent FMM

PyExaFMM

Research Context

Motivation

Analytic FMM

Kernel Independent FMM

Table of Contents

Fast Multipole Methods (FMMs)

PyExaFMM

Motivation

Goals

Outcomes

Research Context

Motivation

[1]

Goals

Outcomes

Table of Contents

Fast Multipole Methods (FMMs)

PyExaFMM

Research Context

Modern Architectures

Low-Rank Compression

Modern Architectures

Low-Rank Compression

References I

- [1] L Greengard and V Rokhlin.
A fast algorithm for particle simulations.
Journal of Computational Physics, 73(2):325 – 348, 1987.