Plato Documentation

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Sa

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Fig. 1: This is the caption of the figure (a simple paragraph).

Plato Analyze is an open source C++ library tool to perform fast physics with gradients for multidisciplinary analysis and optimization.

Note: The Plato Analyze code can be accessed at the PlatoAnalyze Github repository.

The following shows how to create a table

Developer	Role
name	role
name	role
name	role

This is an example of some math

$\alpha > \beta$

$$n_{\text{offset}} = \sum_{k=0}^{N-1} s_k n_k$$

CHAPTER

ONE

CONTENTS

1.1 Plato Input Deck

1.1.1 Introduction

This describes the Plato input deck. The Plato input deck contains the "recipe"for running a Plato optimization problem. A Plato problem is either a topology optimiza-tion problem or a shape/CAD parameter optimization problem. In these problems we aretrying to optimize the toplogy or CAD parameters such that the resulting design meetssome user-defined perfromance objective. These types of problems require a geometricdefinition of the design domain as well as instructions about what the objectives and con-straints are, what physics codes will be used to evaluate the objectives and constraints,what optimization algorithm to use, and variuos other parameters. The geoemtry is gen-erally provided in the form of a finite element mesh and all of the other instructions arecontained in the Plato input deck. This document will define general concepts used in thesetup of a Plato optimization problem and will then define all of the possible options thatcan be included in the input deck.

1.1.2 General Concepts

Optimization problems can be very complex and require lots of different information. ThePlato input deck is designed to be very general in the way it defines an optimizationproblem breaking it down into its fundamental pieces that can be combined in differentways to define different kinds of problems. There are 5 main building blocks upon whichall optimziation problems are defined in Plato. This section will briefly introduce thesebuilding blocks and describe how they are used to define an optimization problem.

CHAPTER

TWO

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