
Plato Documentation

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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](#).

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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 optimization problem or a shape/CAD parameter optimization problem. In these problems we are trying to optimize the topology or CAD parameters such that the resulting design meets some user-defined performance objective. These types of problems require a geometric definition of the design domain as well as instructions about what the objectives and constraints are, what physics codes will be used to evaluate the objectives and constraints, what optimization algorithm to use, and various other parameters. The geometry is generally provided in the form of a finite element mesh and all of the other instructions are contained in the Plato input deck. This document will define general concepts used in the setup of a Plato optimization problem and will then define all of the possible options that can be included in the input deck.

1.1.2 General Concepts

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

INDICES AND TABLES

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