Hyperbolicity Course Notes Spring 2024

Lecture 4 — 06, 06, 2024 (draft version 0)

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1 Overview

The topics in today's lecture are:

1. Proof of the Hodge structures in family satisfies the Griffiths transversality condition,
2. We will construct the Higgs metric (not necessarily positive definition) and Hodge metric (positive definite) on the Hodge bundle,
3. We will give a geometric discription of the Higgs field (which is actually the Kodaira-Spencer map),
4. We will construct the compact dual, period domain, period mapping and we will introduce some basic properties about period mapping and period domain,
5. We will study the curvature property on the period domain. As an application, we will show the moduli space of Calabi-Yau manifold is hyperbolic.