

EVANS 第一章

AN ALL-IN-ONE NOTES PACKAGE FOR STUDENTS

CDK

PhD. Student at Nanjing University

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论文主要内容概述

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1652940213@qq.com

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SECTION 1

偏微分方程

偏微分方程¹简记为 PDE.

我们可以符号化地写出一个典型的偏微分方程如下：

固定一个整数 $k \geq 1$ 并且令 U 代表 \mathbb{R}^n 的一个开子集.

Definition 1 An expression of the form

$$F(D^k u(x), D^{k-1} u(x), \dots, Du(x), u(x), x) = 0 \quad (x \in U) \quad (1.1)$$

is called a k^{th} -order partial differential equation, where

$$F : \mathbb{R}^{n^k} \times \mathbb{R}^{n^{k-1}} \times \dots \times \mathbb{R}^n \times \mathbb{R} \times U \rightarrow \mathbb{R}$$

is given and

$$u : U \rightarrow \mathbb{R}$$

is the unknown.

¹ A partial differential equation (PDE) is an equation involving an unknown function of two or more variables and certain of its partial derivatives

SECTION 2

1

Definition 2