SLP REPORT

Report Title

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List of Symbols

x	position
v	velocity
a	acceleration
t	time
F	force

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1 Abstract

This supervised learning project develops a theory & computation of lagrangian coherent structures using 2 approaches ie; One is lagrangian approach and the other is Eularian approach.Both these approaches have their own advantages and disadvantages.We will go through their approaches and deep mathematical relationship that exists between two of them and we will define new Eularian diagnostic : Infinitesimal-time LCS(iLCS).iLCS will be shown to be the limit of LCS as t->0 and finally using the iLCS we will demonstrate the effectiveness of iLCS using double Gyre and comparing the altraction rate field to FILE field.

2 Introduction

These diagnostics can help to predict how particles spread in a fluid from over a certain time interval.However, when you look at the lagrangian methods, they rely on the integration of particle trajections which is time consuming & computationally expensive but the Eularian approach, they use the eularian rate of strain tensor which is calculated from the gradients of velocity ie; here we analyze the system without integration which reduces time & computational power.

Now let us look at both the approaches and compare them:

3 Literature Review

4 Modeling

5 Results

6 Conclusion