Chao's Rules
a blog
GaTech graduate research project, spring 2011

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Chapter 1

Research blog

2011-03-16 PC to Ruslan, Stefan and Evangelos Chao Shi shichao116@gmail.com is starting (rather late) to work on slicing and dicing Kuramoto Sivashinsky as a 1st year graduate student project. Hopefully we can get him to speed with your and Stefan's help within the next six months. At the moment he is reading parts of ChaosBook and our articles, but it might be wise that you teach him immediately how to use your KS programs and data, so we do not waste time on that. Chao can compute.

2011-03-16 PC Chao, please keep track of what goes on in siminos/blog/ and siminos/lyapunov/ - you will be getting emails about updates. There is some current excitement there concerning the 'physical' dimensionality of the Kuramoto-Sivashinsky strange attractors.

2011-03-17 CS to Ruslan, Stefan and Evangelos Hi! Nice to meet you all. It is the first time I type something here. I am still reading Chapter 4.[1] I will catch up with you as soon as I can. Maybe I will have a lot of questions to consult you. Hope you won't bother:)

Professor Cvitanovic, I still haven't found out why this blog cannot display bibliography properly on my computer. But I think I will first concentrate on those papers and come to deal with this later.

2011-03-19 CS to PC Hi Professor Cvitanovic, I manage to make Latex work on my laptop without actually knowing what actually happened, it works anyway. As I tried one bibliography in last conversation.

Yesterday I went finished Chapter 4 but skipped the detail of the some examples. We discussed the first half of Chapter 4. Since there're pretty much mathematical detail and examples, we decide to break it into two parts. By the way, the notation of this chapter at the beginning is a

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¹`RepoFile`, rev. : last edit by , //

little bit confusing and took me a while to get the concept of what those formulas really mean. I have some other questions about Chapter 4 but but now I am not used to typing math symbols here, I might ask you later directly or write it here if I get familiar with it.

Also I have a question about Example 3.2 in Chapter 3. It states that the choice of the coordinates of the pinball game are smart because they conserve the phase space volume. I don't understand this, would you mind explain it more specifically? Going from here, I am also wondering how to choose phase space coordinates? Does phase/state space coordinates have any requirement and whether conservation of space volume is such a requirement? What's the meaning of conservation of phase space requirement? In my understanding in Hamiltonian flows, conservation of phase space volume means conservation of energy, am I right? Thanks!

Bibliography

[1] D. C. P. Ellis, F. Gay-Balmaz, D. D. Holm, and T. S. Ratiu, Lagrange-Poincaré field equations, Submitted to J. Geometry and Physics, arXiv:0910.0874, 2009.