EE2020 – PDE & f(z) : welcoming messages

Prof. Yi-Wen Liu
Dept. Electrical Engineering,
National Tsing Hua University
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A bit about myself

- 2010-2012: 機率教過四次
- 2013-2016: 線代教過四次

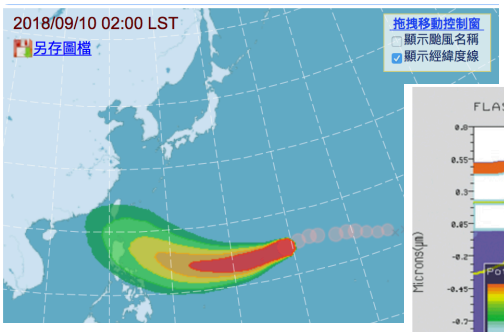
- 計算機程式(1)、神經網路(1)、DSP概論(3)、研究所DSP(2)、DSP實驗、數位聲訊分析與合成

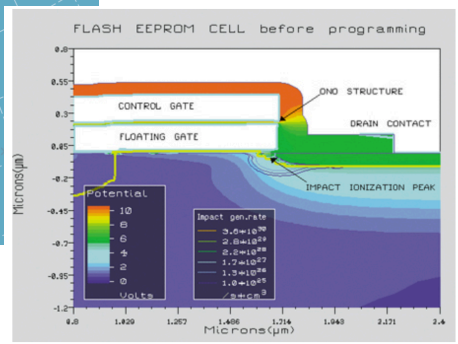
- This is the first time I offer this course.

學Partial Differential Eq. 跟 f(z) 有什麼用？

The Mastering Design Thinking online program is for individuals and teams who want to adopt the powerful practice of design thinking in their organization. Functional and cross-functional teams will find the program especially valuable.

PDE用來描述任何隨時空變化的事情





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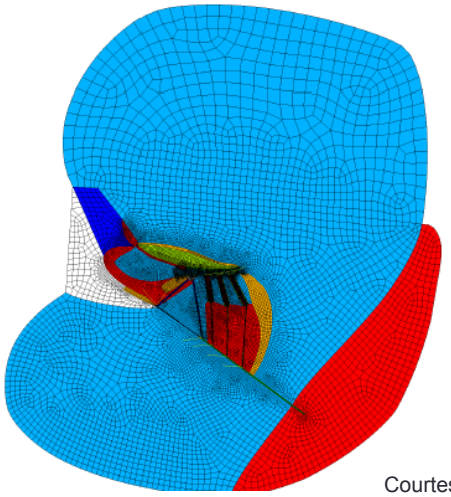
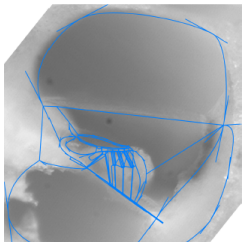
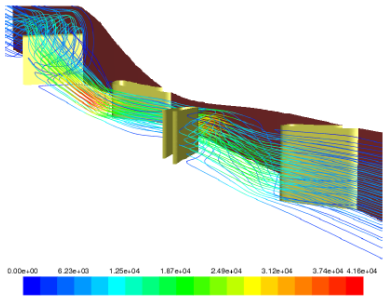
科提氏器的結構力學與流體力學



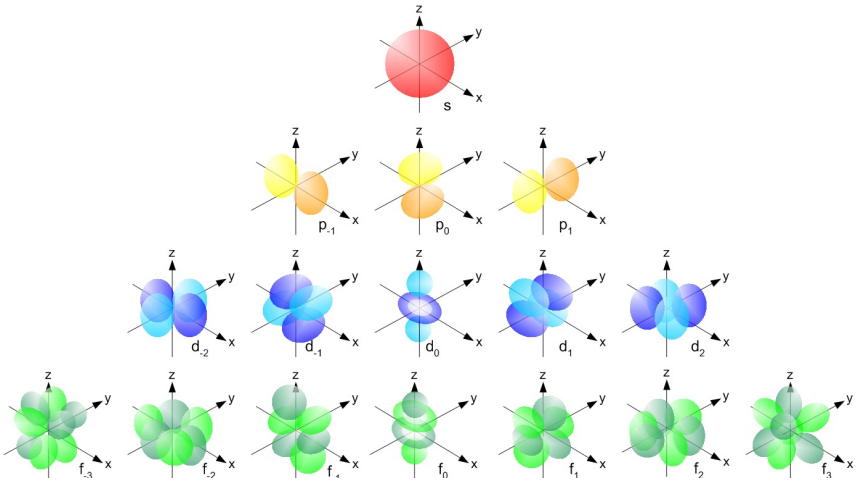




Streamlines coloured by magnitude of velocity

Courtesy of **J. Baumgart** et al. (2008) Mechanics of Hearing Workshop, Keel University, UK

Orbitals of the hydrogen atom



不懂PDE 的話，學物理大概...

Where complex analysis might find applications

- It can help you solve PDE – *conformal mapping*
- Complex analysis in control theory – analyticity and causality, Hilbert transform/ Kramer-Krönig relations
- Series expansion in signals and systems -- the z-transform

Syllabus, logistics, important dates

- Text book: Advanced Engineering Mathematics, by M. Greenberg, 2nd Ed. Pearson New Int. Ed. 滄海圖書
- 4 hrs/week, 3 credits
  - Therefore we will have 「當場練習課」* (14% + bonus)
- Sep. 11-Nov. 15: PDE;
  Nov. 20-Dec. 27: Complex Analysis
- Oct. 23 = 1st Midterm (20%)
- Dec. 11 = 2nd Midterm (33%)
- Jan. 7 = Final Exam (33%)

Week	Dates	Topics
1	9/11, 13	Heat
2	9/18, **20**	Heat, 橘色為「當場練習課」
3	9/25, 27	Heat
4	10/2, **4**	Waves
5	10/9, 11	Waves
6	10/16, **18**	Waves
7	10/23, 25	1st MT, MT 檢討（助教帶）
8	10/30, 11/1	Laplace
9	11/6, **8**	Laplace
10	11/13, 15	Laplace
11	11/20, 22	Analyticity of f(z)
12	11/27, **29**	Complex integral
13	12/4, 6	Complex integral, Series Expansion
14	12/11, **13**	2nd MT, MT 檢討【列入當場練習課】
15	12/18, 20	Residue Theorem
16	12/25, 27	Conformal mapping
17	**Jan. 3, 2019**	最後一次當場練習課

Exams and grading policies

- Exams will be either open book or open A4 cheat sheets.
- 20% MT1，33% MT2，33% Final Exam
- 14% 當場練習，有來有寫有滿分
  - 我們會確定你本人有來
  - 共七次，一次佔學期成績2分
  - 請攜帶紙筆，或是寫在筆記本上。我們會嘗試確認你本人有寫。
- 5% 上台講解 Bonus
  - 鼓勵同學在當場練習課的第一節「練習」上台講解。
  - 第一次加兩分，之後每次加一分，最多加五分。

為什麼要有「當場練習課」

- 詳細的計算是本課程必經之路
- 勤能補拙
- 手到、心到
  - 拍照拍不到

Letter grade 決定方式

- Raw score according to the rules on the previous slide.
- The raw score of the entire class will be ranked.
- Your final grade will be determined according to your rank, **instead of direct numeric-to-letter conversion**.
- A student with a higher rank will receive a grade no worse than that received by a student with a lower rank.
- The grade boundaries will be solely determined by the teaching team after the ranking is calculated.
  - I typically look for gaps, in particular the gap between D and C-.
  - A+ assigned to no more than top 10% of the class.

My grading history

- 2016 Linear Algebra: mean = 2.67, Fail = 15.85%
  - Remarks*: Median* is higher.
- 2015 Linear Algebra: 2.80, 10.99%
- 2017 DSP (研): 3.49, 6.76%

Other things. Questions?

- My office hour is Friday 3-4 pm. I will try to be there most of the time. Please walk in.
- https://www.facebook.com/groups/209645126315106/