Physics PhD application share

An Xiaodong

Graduated from PolyU AP, 2022.

Now study in Georgia Tech, Physics PhD program.

Georgia Tech Physics College of Sciences

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Xiaodong An

Graduate Student

Education

- B.Eng. in Engineering Physics, HK Polytechnic University, 2018-2022

Research Interests

- Computational Physics
- High-Performance Computing
- Nonlinear Dynamics
- Biophysics

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Videos

Life in Georgia tech

	1st Year	2nd Year	3rd Year
Fall	Core Courses Elective Course CETL 8000 PH1: Physics TA Preparation PHYS 8002: Seminar & RCR Training	Thesis Research Minor Course or Advanced Physics Course (optional)	Thesis Research Minor Course or Advanced Physics Course (optional) **Thesis Proposal and Proposal Exam due for ALL Ph.D. Students**
Spring	Core Courses Elective Course Special Problem Research	Thesis Research Minor Course or Advanced Physics Course (optional)	Thesis Research Minor Course or Advanced Physics Course (optional)
Summer	Special Problem Research	Thesis Research	Thesis Research

Monday	03:30 pm-06:15 pm	Xiaodong An	Gwyn O'Sullivan	CULC 375
		Zachary Gazzillo	Emma Hanson	CULC 373
	06:30 pm-09:15 pm	Xiaodong An	Wael Ghanami	CULC 375
		Jiyeon Maeng	Dominic Picca	CULC 373

Education

Ph.D. in Physics		Georgia Institute of Technology	Atlanta, GA, USA 08/15/2012 – 05/05/2017
M.S. in Computer Science & Engineering	GPA: 3.86/4.0	Georgia Institute of Technology	Atlanta, GA, USA 01/01/2016 – 06/01/2016
B.S. in Physics	GPA: 3.75/4.0	[redacted] University	[redacted] 09/01/2008 - 06/05/2012

[redacted] Software Engineer — San Francisco, CA, USA — 05/22/2017 – 08/27/201

Search ranking team ____ — 03/01/2019 – 08/27/201

1 Variations and continuum mechanics

Consider a one-dimensional elastic rod of varying composition. Material that is initially at position x is displaced by $u(x)$. The potential energy stored within a section of the rod initially between x and $x + dx$ is $g(x)u'(x)^2/2$, where $g(x)$ is the local elastic modulus. Thus, the total potential energy of the rod is:

$$V[u(x)] = \int_0^L \frac{g(x)}{2} u'(x)^2 dx. \quad (1)$$

If the system is dissipative the displacement field will eventually adopt the configuration that minimizes the energy subject to boundary conditions. Let those conditions be $u(0) = u_0, u(L) = u_L$.

(a) 5 points Using variational calculus, derive an expression for the derivative of the tension, $t(x) \equiv g(x)u'(x)$, with respect to x at an equilibrium configuration.

(b) 5 points Derive an expression for the equilibrium displacement, $u(x)$, consistent with the boundary conditions.

(c) 5 points Derive an expression for the potential energy of the system consistent with the boundary conditions. Based on your expression, is your system translationally invariant, meaning that displacing the entire system

My 22 Fall application result

GPA: 3.82/4.3

GRE: 325

TOEFL: 99

Major I applied: PhD in Physics

Research experience: 1. PolyU Glass simulation 2. Georgia Tech Liquid simulation

- The U I applied:

- 1 The University of Texas at Austin
- 2 Ohio State University
- 3 University of Maryland--College Park
- 4 Georgia Institute of Technology
- 5 Boston University
- 6 Purdue University--West Lafayette
- 7 University of California--Los Angeles
- 8 Northwestern University
- 9 Michigan State University
- 10 Minnesota Twins university
- 11 University of California--Davis
- 12 Northeastern University

Some important factors in application

- PhD or Master or Go to work?
- How to decide school list
- How to ask for Recommend letters
- Undergraduate Research
- Do I need an agent (留学中介)?
- So what gives me admission into PhD program?

PhD or Master or Go to work?

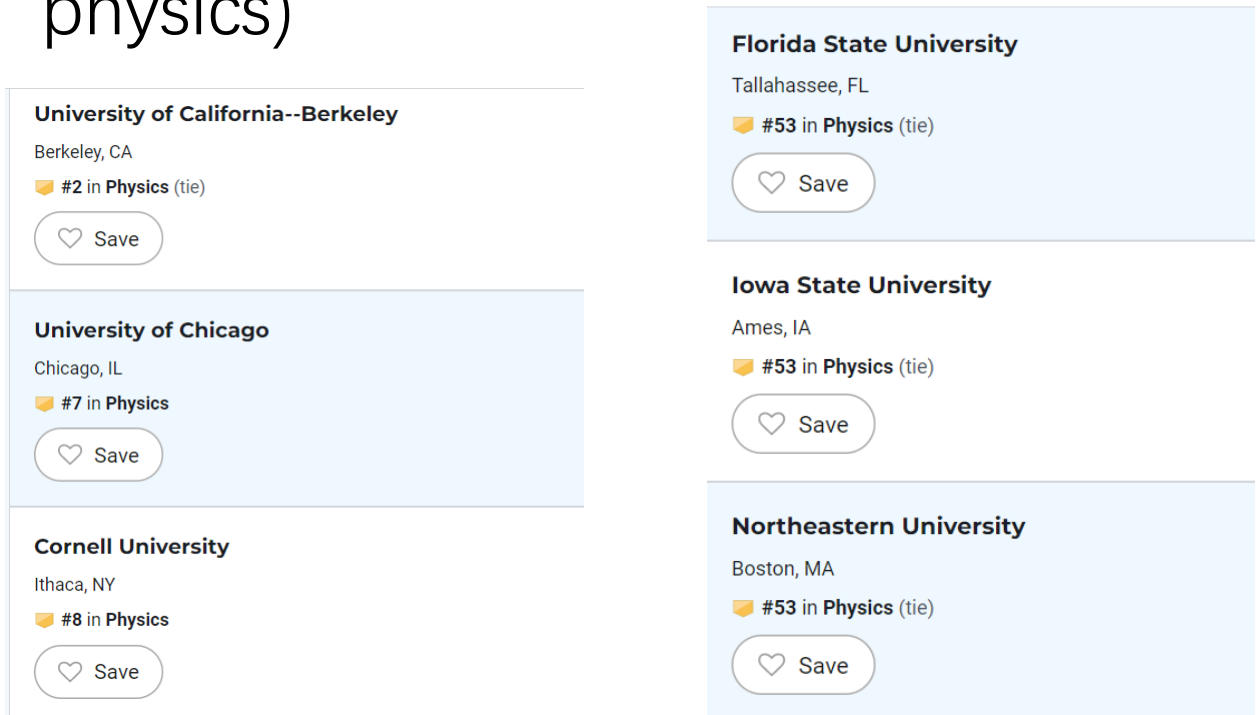
- Reason for PhD: Tuition fee wavier and salary (in US about 2k+/month); you don't hate doing research; you can choose academia (be a postdoc) or industrial (go to work) in the future.

- Reason for Master: Your family can support your tuition fee; time saving (max 2 years); mostly industrial oriented;

- Go to work: you can do that but I don't recommend it for physics major.

How to decide school list?

- 1. Ask those who already graduated.
- 2. Use tools like 1point3acres.com, thegradcafe.com (see how others choose their schools)
- 3. Choose 2-3 top schools and 2-3 bottom safe schools. (us news physics)



Recommend letter

- At least 2 letters you need to collect.
- From professors who you have done research with or at least who are familiar with you

- For me: first one from Dr. Lam in PolyU. I did research with Dr. Lam during year 3-4 about Glass simulation.
- Second one from Dr. Flavio in Georgia Tech. I did online research with Dr. Flavio during year 4 about Liquid simulation.

How to ask for Recommend letters

- Prepare your school list, CV and research experience.
- Send a nice and polite email to the professor.
- And patient waiting.

Dear Flavio

Hope this email finds you well

I'm William, and I'm writing for several strong letters for my Ph.D application in Physics regarding to the research experience \ you during summer about fluid dynamics.

In the attachment I put the school list ,summary of what I have done in summer, my CV and also a previous letter you wrote for me. Please have a look. (By the way, I received that HK program offer, where you wrote letter for me, but I rejected it because I still want to go to the US)

And the list is not the final one, please give me any advice if you have about the professors and schools that I chose.

I think those universities will send you links later after i put your name in their application system.

What's more, about the paper, I probably have no time for it, because I'm very busy now for Ph.D apply and final, sorry for that.

Thanks!
Best regards,
Will

Hello Will,

can you send me your CV or resume?

what is your GPA? in case is good I want to mention it in the letters.

Let me know,

Cheers

Flavio

Dear Will,
Sorry for the short responses, I have been very busy with the end of the semester, grants and meetings.
but I submitted a strong letter to
1 The University of Texas at Austin
2 Ohio State University
3 University of Maryland--College Park

6 Purdue University--West Lafayette
10 Minnesota Twins university
11 University of California--Davis
13 University of North Carolina at Chapel Hill
and GT
will submit the rest this weekend.
Hope you get good news from most places, keep fingers crossed 😉
and Happy new year!!
Flavio

Undergraduate Research

- To get research opportunities, act as early as you can (say, year2)
- Send an email to the professors with your CV, transcript and research interest. (**Use University email**, don't use Gmail or others like QQ email)

Dear Dr Lam

Hello!

My name is An Xiaodong, year 3 and i took your course AP20005 last year, getting A. I heard from Prof Dai that your research topic is more theorical than experimental, which is my favourite. And may i ask if there is any opportunity for me to do online research (cuz COVID, i cannot come to HK) with you in this semester? And if possible, continue to do the research during the summer vacation and final academic year.

Thanks!

Xiaodong

Dear Xiaodong,

I remember your name very well, although sorry that I cannot associate with your face yet. You did very well. Welcome to my group. I need many good students on our project of glass transition. You may know that Gautham, Xinyuan, and Chin Yuan are in my group and are doing very well. Michael joined us a few days ago. The ideal plan for each of you will be exercises, research+FYP, and PhD fellowship, although I understand not everybody like to stay for PhD. Let's see how it goes.

To save time, allow me to forward you emails with Chin Yuan. Please do at least one, if not both, of the exercises first.

Best Regards,
Chi-Hang

Undergraduate Research

- You can have a taste of doing research and see what you like.
- It gives you future recommend letters for Graduate program.

发件人: Fenton, Flavio H <flavio.fenton@physics.gatech.edu>
发送时间: 2021年3月2日 18:06
收件人: An, Xiaodong <xan37@gatech.edu>; Kaboudian, Abouzar <abouzar.kaboudian@physics.gatech.edu>
主题: Re: About summer research (adviced by dr scherbakov)

Hello Xiandong,
So I was thinking in two possible projects. one is to continue what we started with a student last summer in generating an ECG electrocardiogram signal from the activation of cells in the tissue,
The student was able to create a 1D cable of cardiac cells and reconstruct the ECG from it, the next step is to go to 2D and then in 3D.
The other project is simulation of liquid, like blood flow using particle hydrodynamics, so we can simulate liquid and interaction with boundaries and splashes etc...
Let us know which one you would find more interesting.
Flaivo

Do I need an agent (留学中介)?

- For PhD: I don’t think you need that. PhD admission almost only cares about your research and recommend letter quality, so an agent will not help you much.

- For Master: You can do that. It will help you mainly in school programs search and statement writing (statement writing is more important in Master application than PhD application).

So what gives me admission into PhD program?

- Relevant and quality research experience – meaning that you can clearly explain what you have done and show some results (best to be published papers)
- One or two strong recommend letters from professors you did research with.
- (Optional) Connection with the program you applied. For example, the professor wrote your letter are from that university or you contacted professors from that university.
- GPA at least 3.7/4.3
- TOEFL 100 around
- GRE 320

Feel free to ask me questions

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