

26 May 2021

Dear BS Applied Physics Students,

Greetings! I am interested in developing simple models for physical phenomena involving vibrated and/or sheared granular materials. If you are willing and able to perform discrete element method (DEM) simulations of these systems, then you are invited to apply to my research team. I am not an expert on DEM simulation myself but I will give you some reasons to study and use DEM simulation. Of course, I have a lot to teach you about science and scientific research.

I will likely be the one to decide on your thesis topic, unless you have a much better idea. You do not need to really like granular materials yourself. At this stage in your scientific career, it is experiencing the research process that is most important, not the topic itself. A bachelor's thesis work is an opportunity for you to experience solving a problem more complex and complicated than a problem set in a systematic and protracted manner with a mentor.

My expectations are that you will:

1. provide yourself with your own computer that can run short programs using LIGGGHTS or MercuryDPM;
2. independently install and learn to use LIGGGHTS or MercuryDPM in two (2) months or less (These packages are easy to learn and to use because there are available tutorials and some legacy codes);
3. discuss with me your research progress and problems at least once a week;
4. maintain a research logbook;
5. review the related literature diligently;
6. start writing your thesis manuscript early;
7. co-author with me a journal article based on your output;
8. accept that thesis work can be difficult and/or boring sometimes;
9. speak your mind honestly and respectfully;
10. accept that your adviser is not always "nice" but must be trusted and respected, and will have the final say on thesis matters; and
11. not commit research fraud.

Thank you.

Sincerely,  
Junius Andre F. Balista  
Associate Professor of Physics  
IMSP, CAS, UPLB