Hi! My name is Damien Zammit. What on earth was I doing in the mathematics department over summer? I could have been sailing or just taking it easy. Well, instead I had a taste of being a researcher in Applied Mathematics. I worked on an 8-week project with the Mechanics of Granular Media Group, headed by Dr. Antoinette Tordesillas, on the mathematical modelling of foams using techniques that she and her group members developed for granular materials (like M&Ms).

So you ask: Foams? Modelling? And what do granular materials have in common with foams? Well, surely you have had a bubble bath before, or used shaving cream or soap? In fact, any substance consisting of bubbles of gas trapped within another medium can be called “foam”. Maybe you like to savour the froth on a cappuccino, or indulge in exotic ice creams… yum.

So, what has mathematics got to do with it? It is important for industry to know exactly how their materials will behave when you squash or stretch them, or force them through a pipe under pressure. Someone has to create accurate mathematical models of materials to allow quantitative measures of ensuring that big expensive machines don’t break. For example, it is vital to know how much resistance a particular ice cream mixture will have while mixing, to ensure correct operation of the machines. What a disaster it would be if the paddles got jammed! (No ice cream for us!)

From this project, Antoinette, Bruce and I wrote a paper [1]. It is very unusual for an undergraduate to get this opportunity. Being part of this project has given me a new perspective on university. I have come to realise that research is a very open-ended field. For instance, there are no “answers” to look up in the back of the textbook here! Don’t be put off if you sit around pondering for a few days before you get anywhere. Overall, I found this project very rewarding and I highly recommend others to apply for a project. Or, you could just spend your summer at Lygon street licking gelatis all day!

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