**Transcript**

***Dr Chris Ormerod – Discrete Integrable Systems***

My research is concerned with discrete integrable systems which is a form of mathematical physics. Now, the main examples of integrable systems are actually wave equations. And what discrete integrable systems are are quantised versions of these wave equations or other integrable systems. So, when you are integrable it means you have a whole lot of structure associated with the equations. A lot of interesting structure which allows you to consider the wave equations in more depth, for example. And you know the discrete versions, the quantised versions they have a lot more fundamental structure to them and are a lot more interesting.

The key outcome for me would be to solve these systems in interesting ways. So these are usually non-linear systems so which mean they are pretty ugly to deal with but what you can usually do is appeal to some sort of linear theory so the linear theory allows you to solve them and actually to look at more structure. And then you can generalise these approaches and that gives you new interesting systems and that reveals more structure so it’s a sort of feedback system.

The impact on the society or the community is a bit hard to say with cutting edge theoretical science. I mean, you know the primary impact will be upon the physical sciences so that will be in physics but with discrete integrable systems that will be things like quantum mechanics because these sort of systems generalise to quantum mechanics. Look, it’s going to be a long time before my work helps build a better toaster but you know it’s never say never and I just find it really interesting this area of research.