The Asia Pacific Consortium of Mathematics for Industry (APCMfI)

Announcement – Motivation and Planning for the Formation and Launch of APCMfI

Mathematics for Industry (MfI) aims at the development of mathematics and its applications to enhance the quality of life on the planet by creating new technologies, improve industrial mathematical research and stimulate the two-way interaction between mathematics and industry. In Industrial Mathematics, it is the questions spawned by real world applications that drive the resulting two-way interaction between a particular application and the associated mathematics that is utilized and developed and that sometimes involves, quite unexpectedly, deeper aspects and new areas of mathematics than initially anticipated.

Though its significance has often been overlooked, industrial mathematics has always been an essential aspect of the history, culture, traditions and development of mathematics, including much of modern theoretical mathematics. Directly and indirectly, developments in mathematics can be traced to the initial attempts to answer quite practical questions. The development of Galileo's telescope and the design of clocks represent early stimuli. Harmonic analysis and Fourier analysis have their origins in the study of heat transfer in metals. The conservation and minimization of energy engendered in the study of thermodynamics and fluid motion underlie much of the foundations of modern theoretical mathematics as well as applied and industrial.

The increasing sophistication of modern industry reflected in, for example, medical measurements, game theory applications in economics, psychology, behavioural science and biology, computer controlled instrumentation, the efficient development of geothermal energy, the microbial treatment of waste water, Ito calculus in finance, has generated a need and demand for mathematical expertise to stimulate, foster and implement the associated innovations. Even the theoretical areas of algebraic geometry, abstract algebra, topology, differential geometry and group theory are playing an increasingly important role in industrial endeavours connected with entertainment (such as games and movies), architecture, analysis of protein structure and error-correcting codes.

There is general agreement and support in the Asia Pacific region to have regular industrial mathematics exchanges, conferences, internships, etc, which build on the activities already occurring. In fact, over the years since the concept of an Asian Consortium of Mathematics for Industry was first proposed and more recently when planning to formalize possibilities, there has been strong support and encouragement from colleagues in China, Hawaii, Korea, Malaysia and Singapore as well as Australia, New Zealand and Japan.

Consequently, a small group, with the encouragement of various colleagues throughout the Asia Pacific region, met in Canberra March 31 to April 2, 2014, to do the initial planning for the formation and launch of APCMfI with the emphasis being fundamentally Mathematics-for-Industry. Those directly involved in the discussions in Canberra were Bob Anderssen (Australia), Zainal Aziz (Malaysia), Frank de Hoog (Australia), Yasuhide Fukumoto (Japan), Alexandra Hogan (Australia), Geoff Mercer (Australia), Masato Wakayama (Japan) and Graeme Wake (New Zealand).

In any endeavour that involves the initiation and implementation of a new opportunity, the situation is similar to planting and nurturing a seed which will grow into a strong and robust tree. The meeting and deliberations of this group represents the preparation of the ground for the planting of the seed. The subsequent planting and nurturing will involve the wide distribution of this Announcement throughout the Asia Pacific region; the seeking of seed funding from various mathematics departments, societies, agencies and industry; the establishment of a website; the launch of APCMfI under the MfI banner.

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