Editorial

N Sathyamurthy, Chief Editor

Email:
nsathyamurthy@gmail.com

Arthur Holly Compton was awarded the Nobel Prize in Physics for the year 1927, "for his discovery of the effect named after him". Interestingly, Chandrasekhara Venkata Raman was awarded the Nobel Prize in Physics for the year 1930, "for his work on the scattering of light and for the discovery of the effect named after him". As far as I could find out, only two others, Cherenkov (1958) and Mössbauer (1961) received the Nobel Prize for discovering the effects named after them.

Compton studied the scattering of X-rays from materials and explained how the scattered X-rays had a longer wavelength, and larger the angle of scattering, larger was the shift in wavelength. He interpreted the results in terms of the particle nature of light (X-ray photons). Raman, on the other hand, studied the scattering of visible light from molecules (in liquids and solids) and interpreted the increase/decrease in the wavelength of the scattered light in terms of the vibrational frequency of the scattering molecules. In other words, Raman Effect was the optical analogue of the Compton Effect! When Raman was busy studying the acoustic properties of musical instruments, apparently, Lord Rayleigh advised him to work with X-rays, if he wanted to make a mark.

Compton was a multifaceted personality, as one would gather from the Article-in-a-Box on him in this issue. He showed how one could excel in theory, while doing experiments, and how one could benefit socially, from what one learns from experiments. He played a critical role in the Manhattan project too.

Compton Effect was a direct illustration of the dual nature of light. Therefore, it helped in laying the foundations of quantum mechanics. I hope the readership benefits from the write-up on Compton and from the reproduction of the classic paper of his.

The issue of *Resonance* in hand also covers an important aspect of quantum mechanics, the phase factor, which plays a fundamental role in many quantum phenomena. In this context, Sushanta Dattagupta discusses the basics of the Aharonov–Bohm effect.

Thought (gedanken) experiments have played an important role in the development of quantum mechanics and the special theory of relativity. Vishwamittar discusses some of the thought experiments that have changed the course of physics.

The third and the concluding part of the write-up – Breakthroughs in Information and Communication Technology (ICT) – appears in this issue. The deep learning or machine learning that is covered in this article is particularly important in view of the importance artificial intelligence or AI, as it is called, is gaining these days.

We also hope the readers enjoy racking their brains solving the crossword by Leena Thorat on venomous organisms across the world.

One doesn't get to thank the authors enough for their contributions to *Resonance*. Here, I would like to express our gratitude to all the authors, especially Professor V Rajaraman for his continued contributions that keep the young (and the not so young) generation informed of the most recent developments in ICT.