How Quantum Physics democratized music

By Professor Sir Michael Berry

The highly respected Bristol University physicist Sir Michael Berry entertained the members of the Cirencester Science and Technology Society to a fascinating insight into the many applications of particle physics in the modern world and in particular to the relevance of quantum physics.

His lecture highlighted the connectivity between the evolution of knowledge in this fundamental sector of contemporary physics and the development of a vast number of devices that are central to the life of developed societies. Indeed, physicists have estimated that, directly and indirectly, quantum physics and quantum mechanics may well contribute around one third to the value of gross domestic product in modern economies.

In order to demonstrate the relevance of quantum physics to the modern world he explored in some detail the progress that has been made over the past century in recording and communicating both sound and vision. Using the example of the compact disc player Professor Berry traced the brief history relating to the invention of the laser in 1958 through to the application of this technology to the first compact disc players almost a quarter of a century later in 1982. One of the key conclusions that he drew from this example, and the further development in sound recording into miniature sound storage devices, was the “connectedness” of the research and way that the laser has democratized music.

Similarly the progress made in recorded vision from the first film made by the inventor Henry Fox Talbot in 1835 to the latest digital equipment has benefitted directly from the progress made by physicists in understanding the features of quantum physics.

The lecturer touched briefly on the relationship between relativity as the physics of the fast and quantum physics as that of the small and illustrated features of the quantum revival equation with the visual aid of the quantum carpet as well as complex equations. Michael Berry then concluded a stimulating lecture by playing music relating to the values of prime numbers that he termed “music of the primes”.