**,From Quantum Mechanics to Quantum Field Theory: The Hopf route**

**Abstract: Developments in Quantum Field Theory have revealed a surprisingly rich structure involving a confluence of ideas from Algebra, Analysis and Topology. For example, the sets of Feynman Diagrams in perturbative Quantum Field Theory (pQFT) present the structure of a Hopf algebra; whereas the Feynman integrals themselves produce Riemann Zeta Functions, or their extensions, the Polyzeta Functions, which in turn form a basis for the algebraic structure. Additionally, these algebraic and analytic concepts can be linked to the topological (braid) structure of the diagrams themselves, thus providing an overall unification of ideas from Hopf algebras, polyzeta functions and knot theory.**

**In this talk we present an a;lternative approach to that arising from an examination of the physics of pQFT. Rather, we start from basic second-quantized Quantum Mechanics, or Quantum Statistical Mechanics. We show that the non-commuting bosons of thie elementary theory exhibit some of the structures noted above, principally that of a Hopf algebra. Taking this as iur starting point, we show that by a deformation of the algebraic structure thus obtained, we arrive at a richer system which exhibits much of the mathematical structure of pQFT.**

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