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Using the floquet-magnus and the Fer expansion approaches to control the spin dynamics in solid-state nuclear magnetic resonance and beyond

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The topic of the talk opens a way to an infinite number of suggestions. However, it is very important to remember that the spin dynamics have recently found new major areas of applications such as topological materials. Researchers, dealing with those new applications, are not usually acquainted with the achievements of the magnetic resonance theory, where those methods were developed more than thirty years ago. They repeat the same mistakes that were made when the methods of spin dynamics and thermodynamics were developed in the past. This talk focused on the spin dynamics in solid-state nuclear magnetic resonance (NMR) and beyond. This presentation is very useful not only for the NMR, physical, and chemical physics communities but for the new communities in several younger fields. It will be very useful for scientists working in different directions. In this talk, I will present the use of the Floquet-Magnus expansion and the Fer expansion approaches for the calculation of effective Hamiltonians and propagators in solid-state NMR. These approaches are very important and contribute theoretically and numerically in the general field of spin dynamics and chemical physics.

Biography

Eugene Stephane Mananga is the Deputy Executive Director of The CUNY ACADEMY FOR HUMANITIES AND SCIENCES, and a member in the Board of Directors-at-Large of The ACADEMY. He is a Faculty Member in the Physics & Chemistry Doctorate Programs at the Graduate Center of the City University of New York. He is an Assistant Professor of Physics and Nuclear Medicine at BCC of CUNY, and an Adjunct Professor of Applied Physics at New York University. He completed his Ph. D in Physics from the Graduate Center of the City University of New York, and holds 6 additional graduate degrees and training from various institutions including Harvard University, Massachusetts General Hospital, and City College of New York.

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