Fractional Members of the Vigneras Multiple Gamma Hierarchy

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Vigneras (1979) proved the existence and recursive properties of the Multi Gamma Hierarchy, as well as a general version of the Bohr-Mollerup theorem for discrete cases. In this project, we extend the hierarchy to fractional members, proving their existence and asymptotic behavior with the Riemann-Liouville integral. Furthermore, we derive closed expressions through differentiation of the Hurwitz zeta function, showing they satisfy the Bohr-Mollerup theorem for continuous cases as well. This completes the hierarchy for non-negative fractional indices, while opening the way for further study in complex-valued indices.

Awards Won:
American Mathematical Society: Honorable Mention and One-Year Membership to AMS (for 5 projects with up to 3 team members per project)