東北大学大学院情報科学研究科
純粋・応用数学研究センター

情報数理談話会のお知らせ

日　時： 2018 年 10 月 29 日 (月) 15:00 — 16:00
　　　　 (会場にお茶を用意しております)
場　所： 東北大学大学院情報科学研究科棟 2 階中講義室

講演者： Gi-Sang Cheon 氏 (Sungkyunkwan University)
題　目： A new application of Riordan arrays to the Riemann hypothesis

[概 要] A Riordan array denoted as (g, f) is an infinite lower triangular matrix constructed out of two functions g, f in $k[[z]]$ with $f(0) = 0$ in such a way that its j th column generating function is gf^j for $j = 0, 1, ...$ In many contexts, we see that the Riordan arrays are used as a machine to generate new approaches in combinatorics, matrix theory and analytic number theory. This talk is devoted to discussing a new application of Riordan arrays. More specifically, we use Riordan arrays to find a large class of matrices called Riordan-Redheffer matrices that have the Mertens function as their determinants. indeed, asymptotic behavior of the Mertens function is closely related to the Riemann hypothesis. Further, we will discuss how the singular values of the Riordan-Redheffer matrix can contribute to solving the Riemann hypothesis.

日　時： 2018 年 10 月 29 日 (月) 16:30 — 17:30
　　　　 (会場にお茶を用意しております)
場　所： 東北大学大学院情報科学研究科棟 2 階中講義室

講演者： Roman Nedela 氏 (University of West Bohemia)
題　目： Automorphism group of a graph and of its Jacobian, and the rank of Jacobian

[概 要] Jacobian of a connected graph Gamma is a universal maximal finite abelian group in which one can define a flow on Gamma satisfying both Kirchhoff laws. It is an important algebraic invariant of a graph, for instance the size of the Jacobian is

equal to the number of the spanning trees. Less understandable is the combinatorial meaning of the rank of Jacobian. Motivated by this general question we construct a homomorphism from Aut(Gamma) into Aut(Jac(Gamma)) and investigate under which additional conditions the homomorphism is injective. As a corollary we obtain that the rank of the Jacobian is related to the structure of the automorphism group of Gamma. This is a joint work with A. Mednykh (Novosibirsk State University).

ホームページ : http://www.math.is.tohoku.ac.jp/research/colloquium.html