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： 2019 年 12 月 19 日㈭ 13:00 より 14:00 まで
　　　　(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 階大講義室

講演者： 谷地村 敏明 氏 (東北大学大学院情報科学研究科)
題　目： Domain perturbations of two-phase eigenvalue problems
　　　　and a related inverse problem
　　　　（二相固有値問題の領域摂動と関連する逆問題）
備　考： この情報数理談話会は課程博士予備審査会を兼ねています

[概 要] The eigenvalue problems of the Laplace operator play an essential role in various fields of mathematics and physics. These eigenvalues strongly depend on the shape of the domain. Many mathematicians have studied the question of how eigenvalues change when perturbing the domain since the pioneering work of Courant–Hilbert. On the other hand, domain perturbations of the eigenvalue problems of elliptic operators with piecewise constant functions have many open questions due to the discontinuity of the coefficients. In this talk, we will consider two-phase eigenvalue problems on thin domains and two-phase eigenvalue problems called reinforcement problems. In particular, we will discuss how the geometric shape of the domain affects the asymptotic behavior of the eigenvalues. Furthermore, we will consider an inverse problem related to the reinforcement problems and discuss the uniqueness and local stability of the inverse problem. We also explain the reconstruction algorithm and numerical computation by using a Neumann tracking functional and gradient descent method.

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