

1125-35-3152

Yajie Zhang* (wonderfulzyj@gmail.com), 715 W Cherry Ln, Apt 2, State College, PA 16803. *A Regularity Analysis of Parabolic Transmission Problem on Polygonal Domain.*

We study theoretical and practical issues for second order linear parabolic equation with jump discontinuities in its coefficients on a polygonal domain that may have cracks or vertices that touch the boundary. We consider in particular a linear parabolic equation with appropriate initial condition and mixed boundary/interface conditions, where the matrix A has variable, piecewise smooth coefficients. We establish some regularity results and, under some additional conditions, we also establish well-posedness in weighted Sobolev spaces in the cases when there are no Neumann boundary conditions imposed on adjacent sides of the polygonal domain. When Neumann boundary conditions are imposed on adjacent sides, we fail to have well-posedness according to the Lumer-Phillips Theorem. (Received September 21, 2016)