

Fractional Powers of Sectorial Operators in Network Shaped Domains

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ABSTRACT. We are concerned with strongly elliptic differential operators equipped with the Kirchhoff conditions in a network shaped domain, which determine sectorial operators in L_2 spaces. Firstly, we define L_p and Sobolev spaces in network shaped domains with fractional orders. From the embedding theorem, the Kirchhoff conditions are only meaningful for the Sobolev spaces of sufficiently large orders. Then, by using complex interpolation spaces, we obtain characterization for the domains of the fractional powers of sectorial operators.