

# Dirichlet forms on canonically compactifiable graphs

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ABSTRACT. We consider weighted graphs with an infinite set  $X$  of vertices, such that every function of finite energy is bounded. For each of these graphs there is a compact set  $K$  containing  $X$  as a dense subset and we can define some kind of boundary as  $\partial X := K \setminus X$ . We then equip the graphs with a finite measure and define two natural Dirichlet forms,  $Q^{(D)}$  and  $Q^{(N)}$ , which we refer to as the forms with Dirichlet and Neumann boundary conditions, respectively. We prove that every form  $Q$ , such that  $Q^{(N)} \leq Q \leq Q^{(D)}$ , can be decomposed into a part living on  $X$  and a part living on  $\partial X$ . We show, that the part living on the boundary is a Dirichlet form with respect to a certain measure.