Boundary value problems on domain with cusps

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We consider boundary value problems of the Laplacian with Dirichlet (or mixed) boundary conditions on domains with singularities. In two dimensions these singularities include also cusps. Our approach is by blowing up the singularities via a conformal change to translate the boundary problem to one on a noncompact manifold with boundary that is of bounded geometry and of finite width. This gives a natural geometric interpretation in the appearing weights and additional conditions needed to obtain well-posedness results. This is joint work with Bernd Ammann (Regensburg) and Victor Nistor (Universite de Lorraine).