962-35-100 **Martin Dindos*** (dindos@math.unc.edu), University of North Carolina, Department of Mathematics, Phillips Hall CB #3250, Chapel Hill, NC 27599-3250. *Semilinear Elliptic Problem on Lipschitz domains in Riemannian manifolds.*

For $\Omega \subset M$ a connected Lipschitz domain, M a n-dimensional Riemannian manifold with Lipschitz metric tensor we consider the following semilinear problem:

$$\Delta u - F(x,u) = 0 \quad \text{in } \Omega, \quad + \text{ boundary conditions.}$$

If F is differentiable in the variable u we can put $a(x,u) = \int_0^1 \frac{\partial}{\partial u} F(x,tu)dt$, $f = -F(x,0)$ and consider instead

$$\Delta u - a(x,u)u = f \quad \text{in } \Omega, \quad + \text{ boundary conditions.} \tag{1}$$

The goal is to solve Dirichlet and Neumann boundary problems for the equation (1) with 'rough'(L^p) boundary data. If $a(x,u) = V(x)$ (i.e., the equation is linear) the results of this nature are typically obtained using layer potential technique. Using a new class of Banach spaces $\mathcal{D}^{s,p}$ and Schauder fixed point theorem we have managed to establish the existence and uniqueness of the solution to (1) for the Dirichlet boundary problem with boundary data in $L^p(\partial\Omega)$, $2-\varepsilon < p \leq \infty$ and for the Neumann problem with boundary data in $L^p(\partial\Omega)$, $1 < p < 2+\varepsilon$. This substantially improves previously known results which required bounded boundary data. (Received August 01, 2000)