1139-37-133 **Dmitry Kleinbock***, Department of Mathematics, Brandeis University, Waltham, MA 02454, and **Nick Wadleigh**, Mathematics Department, Technion - Israel Institute of Technology, 32000 Haifa, Israel. *Dynamics and combinatorics of improving Dirichlet's Theorem on Diophantine approximation.*

For a non-increasing function ψ, say that a real number x belongs to the ψ-*Dirichlet* set $D(\psi)$ if the system

$$\begin{cases} |qx - p| < \psi(t) \\ |q| < t \end{cases}$$

has a nontrivial integer solution (p, q) for all large enough t. The choice $\psi_1(t) = 1/t$ corresponds to the classical Dirichlet's Theorem which states that every x is in $D(\psi_1)$. In the 1960s Davenport and Schmidt showed that for any $c < 1$ the set $D(c\psi_1)$ has Lebesgue measure zero, and in fact elements of this set were explicitly identified using continued fractions. We extend their work to similarly describe sets $D(\psi)$ for arbitrary ψ, and then use dynamics of the Gauss map to find a criterion for ψ-Dirichlet sets to have zero or full Lebesgue measure. (Received February 05, 2018)