RUSSELL MILLER, Queens College & CUNY Graduate Center
A Computability-Theoretic Proof of Lusin's Theorem

In real analysis, Lusin's Theorem states that for every Borel-measurable function $f : \mathbb{R} \to \mathbb{R}$ and every $\epsilon > 0$, there exists a continuous function $g : \mathbb{R} \to \mathbb{R}$ that equals f except on a set of measure $< \epsilon$. This is often viewed as one of Littlewood's Three Principles: every measurable function is almost continuous. We will present a proof of this theorem using computable analysis, centered around the relativization of the known fact that for computable ordinals α, almost all subsets A of ω have the property that $A^{(\alpha)} \leq_T \emptyset^{(\alpha)} \oplus A$.