The obstacle problem for the fractional Laplacian with drift
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We establish the $C^{1+\gamma}$-Hölder regularity of the regular free boundary in the stationary obstacle problem defined by the fractional Laplace operator with drift in the subcritical regime. Our method of the proof consists in proving a new monotonicity formula and an epiperimetric inequality. Both tools generalizes the original ideas of G. Weiss in for the classical obstacle problem to the framework of fractional powers of the Laplace operator with drift. This is joint work with Nicola Garofalo, Arshak Petrosyan, and Mariana Smit Vega Garcia