Asymptotic optimal location of facilities in a competition between population and industries

GIUSEPPE BUTTAZZO, FILIPPO SANTAMBROGIO AND EUGENE STEPANOV

Abstract. We consider the problem of optimally locating a given number k of points in $\mathbb{R}^n$ for an integral cost function which takes into account two measures φ^+ and φ^-. The points represent for example new industrial facilities that have to be located, the measure φ^+ representing in this case already existing industries that want to be close to the new ones, and φ^- representing private citizens who want to stay far away. The asymptotic analysis as $k \to \infty$ is performed, providing the asymptotic density of optimal locations.