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AN OBSERVER AND A PAIR OF OBJECTS ENVELOPING A SET OF CONVEX REGIONS

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In the space X ($X = \mathbb{R}^2, \mathbb{R}^3$), there are a family of pairwise disjoint convex closed regions G_i and a shortest trajectory $\mathcal{T}$ connecting given initial and finite points and enveloping the regions G_i, $\mathcal{T} \cap \cup_i \overset{\circ}{G}_i = \varnothing$. Two objects, t and T, move under observation along the trajectory $\mathcal{T}$ with a constant speed, and the distance $\rho(t, T)$ between the objects along the curve $\mathcal{T}$ satisfies the condition $0 < \rho(t, T) \le d$ for given $d > 0$. We construct a trajectory $\mathcal{T}_f$ of the observer's motion and find the observer's speed mode such that the following inequality holds at any time τ for given $\delta > d$:

$$\min\left\{\|f_\tau - t_\tau\|, \|f_\tau - T_\tau\|\right\} = \delta.$$

Keywords: moving object, observer, trajectory, speed mode.

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