Continuous surveillance of points by rotating \( \vec{i} \)-loodlights

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Let \( P \) and \( F \) be sets of \( n \geq 2 \) and \( m \geq 2 \) points in the plane, respectively, so that \( P \cap F \) is in general position. We study the problem of finding the minimum angle in \([2\pi/m, 2\pi]\) such that one can install at each point of \( F \) a stationary rotating \( \vec{i} \)-loodlight with illumination angle \( \vec{i} \), initially oriented in a suitable direction, in such a way that, at all times, every target point of \( P \) is illuminated by at least one light. All \( \vec{i} \)-loodlights rotate at unit speed and clockwise. We give an upper bound for the 1-dimensional problem and present results for some instances of the general problem. Specifically, we solve the problem for the case in which we have two \( \vec{i} \)-loodlights and many points, and give an upper bound for the case in which there are many \( \vec{i} \)-loodlights and only two target points.