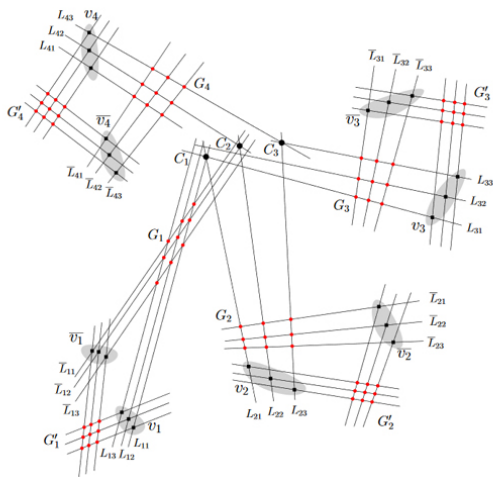


# Continuous surveillance of points by rotating floodlights

S.Bereg; J.M. Diaz-Banez; Fort, Marta; M.A.Lopez; P. Perez-Lantero; J.Urrutia



Let  $P$  and  $F$  be sets of  $n \geq 2$  and  $m \geq 2$  points in a plane, respectively. We study the problem of finding the minimum angle  $\hat{\alpha} \in [\frac{2\hat{\alpha}}{m}, 2\hat{\alpha}]$  such that one can install at each point of  $F$  a stationary rotating floodlight with illumination angle  $\hat{\alpha}$ , 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 floodlight. All floodlights rotate clockwise at unit speed. We provide bounds for the case in which the elements of  $P \cap F$  are on a given line, and present exact results for the case in the plane in which we have two floodlights and many target points. We further consider

the non-rotating version of the problem and look for the minimum angle  $\hat{\alpha}$  such that one can install a non-rotating floodlight with illumination angle  $\hat{\alpha}$  at each point of  $F$ , in such a way that every target point of  $P$  is illuminated by at least one floodlight. We show that this problem is NP-hard and hard to approximate.