Problem 3 (suggested by Prof. Alexander Borisov), due on Monday, October 7.

Three players are playing a game. They are taking turns placing kings on a 1000×1000 chessboard, so that the newly-placed king is not adjacent (directly or diagonally) to any of the previously placed kings (i.e. the kings are in non-attacking positions). Whoever cannot place a king, loses. Prove that if any two of the players cooperate, they can make the third player lose.

This problem was created by Prof. Alexander Borisov. We have not received any solutions. For a slightly edited version of the solution provided by Alexander, see the following link Solution.