

Romeo and Juliet is EXPTIME-complete

Tomáš Valla

(joint work with Harmender Gahlawat and Jan Matyáš Křišťan)

ROMEIO AND JULIET is a Rendezvous game played on graphs between two players: *facilitator* and *divider*. Facilitator controls two agents, *Romeo* (\mathcal{R}) and *Juliet* (\mathcal{J}), who aim to meet at some vertex. The divider has k agents and his goal is to prevent the meeting. The optimization in this game lies at deciding the minimum number of divider agents sufficient to prevent \mathcal{R} and \mathcal{J} from meeting in a graph, called the *dynamic separation number*.

We establish that ROMEIO AND JULIET is EXPTIME-complete, settling a conjecture of Fomin, Golovach, and Thilikos [Inf. and Comp., 2023] positively. We also consider the game for directed graphs and establish that although the game is EXPTIME-complete for general directed graphs, it is PSPACE-complete and co-W[2]-hard for directed acyclic graphs.