M.V. Zhitlukhin (Steklov Mathematical Institute, Moscow, Russia). Mathematical models of prediction markets

Prediction markets are trading systems where agents buy and sell contracts on outcomes of future random events, forming a collective forecast. It is an empirical fact that such forecasts exhibit relatively high accuracy, yet the theoretical foundations of this phenomenon remain not well understood.

This work proposes a dynamic stochastic model explaining (in a somewhat simplified form) the mechanism of information aggregation on one of the most well-known prediction market platforms—the Iowa Electronic Markets.

Theorem. In the proposed model, if at least one agent asymptotically correctly estimates the conditional probabilities of a sequence of random events, the collective forecast converges to the true conditional probabilities.

Joint work with N. Badulina and D. Shatilovich.

REFERENCES

1. Badulina N., Shatilovich D., Zhitlukhin M (2024). On convergence of forecasts in prediction markets. *arXiv:2402.16345*.