

# Applying the Explicit Aggregation Algorithm to Heterogeneous Agent Models in Continuous Time\*

Masakazu Emoto<sup>†</sup>

Takeki Sunakawa<sup>‡</sup>

September 2020

## Abstract

This paper applies the explicit aggregation (XPA) algorithm to the standard heterogeneous agent model with aggregate uncertainty in continuous time. We find that the XPA algorithm is faster in solving the model than the Krusell-Smith algorithm, because the XPA algorithm does not rely on simulations to solve the model. The XPA algorithm is more accurate than the perturbation method when aggregate uncertainty is large.

*Keywords:* Continuous Time, Heterogeneous Agent Models, Explicit Aggregation Algorithm.

*JEL codes:* C63; D52

---

\*We thank Takashi Kamihigashi and Tamotsu Nakamura for comments and suggestions. The programming code used in the paper is available at <https://github.com/Masakazu-Emoto/XPA-in-Continuous-Time>.

<sup>†</sup>Graduate School of Economics, Kobe University, 2-1 Rokko-dai, Nada, Kobe, 657-8501; Email: [masakazu.emoto@gmail.com](mailto:masakazu.emoto@gmail.com)

<sup>‡</sup>Graduate School of Economics, Hitotsubashi University; Email: [takeki.sunakawa@gmail.com](mailto:takeki.sunakawa@gmail.com).