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Group Chase and Escape with Conversion from Targets to Chasers

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We are studying the effect of converting caught targets into new chasers in the context of the recently proposed `group chase and escape' problem. Numerical simulations have shown that this conversion can substantially reduce the lifetimes of the targets when a large number of them are initially present. At the same time, it also leads to a non-monotonic dependence on the initial number of targets, resulting in the existence of a maximum lifetime. As a counter effect for this conversion, we further introduce self-multiplying abilities to the targets. We found that the longest lifetime exists when suitable combination of these two effects is created.

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