

Inspired by the nervous system, we extend the geometric amoebot model by reconfigurable circuits. We allow amoebots to connect themselves to whole substructures by constructing circuits. Each amoebot is able to transmit and receive primitive signals through its circuits. However, amoebots neither know the source of the signal nor the number of sources if more than one amoebot decides to transmit a signal on the same circuit at the same time.

We demonstrate the power of these reconfigurable circuits by computing the global maxima of an amoebot structure. Our algorithm requires $O(\log^2 n)$ rounds w.h.p.