

Rate-Independent Constructs for Chemical Computation

Phillip Senum, Marc Riedel

Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota, United States

E-mail: { senu0004, mriedel }@umn.edu

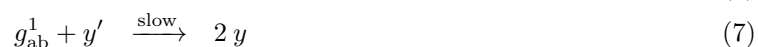
Appendix: Exponentiation Reactions

We present chemical reactions that implement the pseudo-code presented in the text.

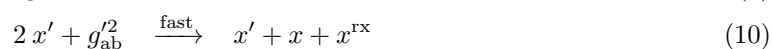
System Initialization As with our multiplication module, we have a small set of reactions to control the overall timing.



Doubling We use a slight variation of our copier module to implement the line of pseudo-code $y = 2 * y$.



Decrement As with our multiplication module, we decrement x once each loop.



Absence Indicators Four absence indicators are needed by this system; they are of the same form as all others described in this paper.