Supplementary information

The two m-files are the MATLAB (R2009b) codes we used for simulations. File const492.m contains differential equations and tunable parameters; run_const492.m contains the solver that solves the equations in const492.m and other procedures for analyzing the calculated results. For example, by running run_const492.m (one should have both scripts in the same folder), we can simulate a linear array of six drops separated by oil, with the outer two drops exposed to light in order to suppress their oscillations. The program also generates a number of plots, such as one of the period of each drop and the phase difference between the first drop and the other three in the array. Output from the program, similar to Figure 9 in the text, is shown below:





The script automatically generates an image of the space-time plot (shown at the left) in the current folder. In the space-time plot, space is horizontal with drop 1 at the left and drop 4 at the right. Time flows from top to bottom. We arbitrarily set the first transition of the first drop to be the reference drop. The first transition of each of the four drops is given by $(\phi_1, \phi_2, \phi_3, \phi_4) = (0.0, -0.4, 0.1, -0.4)$. In the plot of the phase difference vs. time, the three curves correspond to $\phi_2 - \phi_1$ (blue), $\phi_3 - \phi_1$ (green), and $\phi_4 - \phi_1$ (red). Initially, $\Delta\phi_{2-1} = 0.6$, $\Delta\phi_{3-1} = 0.1$, and $\Delta\phi_{4-1} = 0.6$.