Fig. 5. Top-down illustration of the diffusion reaction simulations implemented to determine T_{ov} and V_{ov}. The inset shows the two vesicles' surfaces are separated by distance d and present docking DNA contained in cylinders of length l_{DNA} and radius r_{DNA} at positions $(\theta_1, \varphi_1) \approx (\pi/2, 0)$ and $(\theta_2, \varphi_2) \approx (\pi/2, \pi)$. The yellow shading indicates V_{ov}, the overlap between two cylinders.

Fig. 6. Average overlap time ($\overline{T}_{ov}$) between vesicles as a function of the maximum surface-to-surface distance which allows docking (d_0). Data (○) are taken from simulations (see *Materials and Methods*) of 50 nm radius vesicles confined to a 2500 nm^2 box. $\overline{T}_{ov}$ was obtained by averaging the motion of 10 vesicles over 10^7 Monte Carlo steps, which corresponds to 30 s. The data show a clear linear trend (solid line).

Fig. 7. Average overlap volume ($\overline{V}_{ov}$) per Monte Carlo step as a function of the number (N_{DNA}) of docking DNA on two vesicles of 50 nm radius. Docking DNA are modeled as cylinders of length, l_{DNA} = 10 nm. The vesicles are kept at a fixed surface-to-surface distance equal to l_{DNA}. Data (○) were obtained by averaging over 10^7 Monte Carlo steps, and are fit well by a quadratic trend (solid line).

Movie 1. Streaming video showing a DNA-mediated docking event between tethered vesicles.