



**Supplementary figure 1, close packed beads reinjection is a highly ordered process:** a) Full length time trace from figure 2b are depicted. Irregularities in the time trace are annotated with the corresponding movie frame showing the perturbation. The first two show frame shift errors where two consecutive particles from the left stream insert between two of the right; these errors are local in the time trace such that periodicity is restored immediately after the event. The third perturbation shows a particle clump which disrupts the flow upstream and downstream of the aggregate. b) Time series and (left) and Discrete Fourier Transform power spectrum (right) of the global intensity variation in the movie data which was subtracted from the time traces in figure 2b and supplementary figure 1a.