Supplementary Information

Asymmetric Traps Array for Particle Transport

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S1. The shift of line of capturing

The size of the trapping gap between the trapping block and the barrier is greater than s when horizontal center of the trapping block locates outside of barrier region (Fig. S1).

![Diagram showing the increase of the size of the trapping gap](image)

Fig S1. The increase of the size of the trapping gap

By Pythagorean theorem, k is given as below.

\[
k = \left\{ s^2 + \left( \frac{g - h - h_{tb}}{2} \right)^2 \right\}^{1/2}
\]

(S1)

The normalized trapping gap size (k/h) is given as below.

\[
\frac{d}{h} = \frac{k}{h} = \left\{ \left( \frac{s}{h} \right)^2 + \frac{1}{4} \left( \frac{g}{h} - 1 - \frac{h_{tb}}{h} \right)^2 \right\}^{1/2}
\]

(S2)

Here, based on the equation S2, we can find physical condition causing increased trapping gap size.

\[
\frac{g}{h} - 1 - \frac{h_{tb}}{h} > 0
\]

(S3)
The increased size of the trapping gap can be expressed in the graph of normalized parameters as the shift of the line of capturing (Fig. S2).

Fig S2. The shift of line of capturing in the graph of normalized parameters. The line of capturing drawn here was obtained at fixed h of 200 µm and normalized inter-barriers gap (g*) of 1.67.