SUPPLEMENTARY FILE

Statistical model and simulation method

To determine if differences between measurements are significant, it is necessary to know the size of the expected fluctuations. The statistical uncertainty must therefore be known, which in turn requires a statistical model in this case derived using computer simulation. The simulation was a simple toy model in Python, using a publicly available random number generator and statistics library. The cross section of the splitter bottom was modelled as a circle with eight identical circle sectors, and the locations of N particles (mimicking e.g. foraminifera) from a simulated fill in the splitter were drawn from a uniform random spatial distribution (Fig. SI 1). The number of particles ending up in one of the splits was recorded for 1000 simulated trials. The resulting particle distribution is shown in Fig. SI 2 for, as an example, $N = 4$ and $N = 40$. A Poisson distribution fit to each of the distributions is also shown; this distribution describes the probability of obtaining a given number of events in a time or space interval if they are independent of the time since - or location of - the last event and occur at some average rate. In a splitter where care has been taken to create a homogeneous particle distribution in the water, this precisely describes the expected situation of particles settling on the base: where one particle lands is not influenced by where the previous one landed. The Poisson distribution has only one parameter: the expectation value μ (which roughly translates to the average value) also immediately gives the variance (such that $\sqrt{\mu}$ describes the width of the distribution, indicating how large statistical fluctuations are expected). The Poisson distribution fits verify that the number of particles in one split is well described by a Poisson distribution with $\mu=N/8$. This was further verified for a range of choices of N.

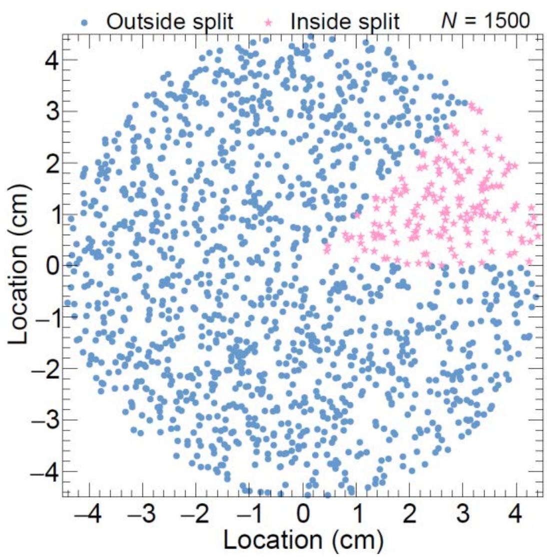

Fig. SI 1. Simulated random spatial distribution of N = 1500 particles on a modelled simplified splitter bottom cross section.

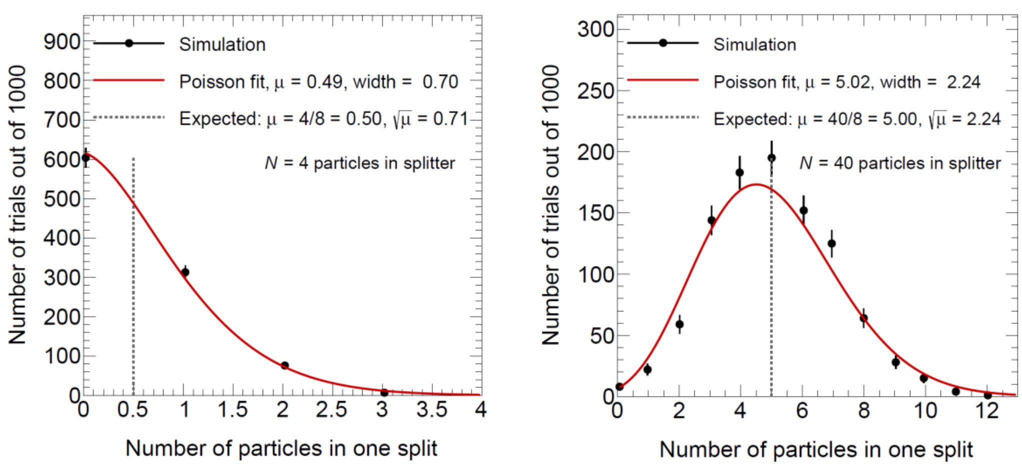

Fig. SI 2. Sampling distributions of number of particles in one eighth of the splitter (black dots) as obtained from simulation of splitting a sample consisting of a) N = 4 and b) N = 40 particles. The distributions are overlaid with Poisson distribution fit (red solid line). The expected number given by $N/8$ is indicated by the dashed grey vertical line.