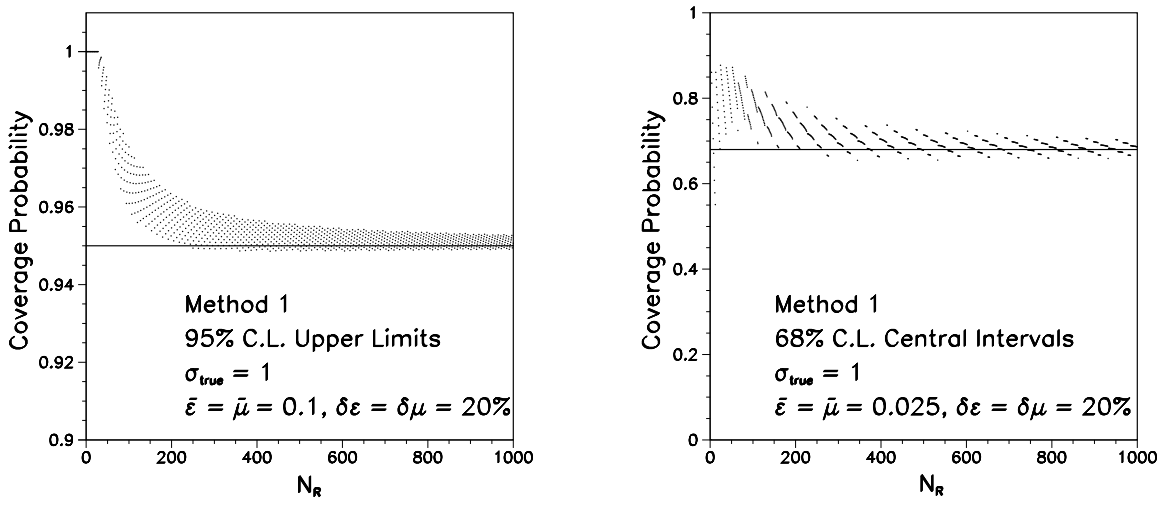

FIG. 4: Coverage probability of Method-1 posterior credibility upper limits (left) and central intervals (right), as a function of the number of experiment replications N_R. The solid lines indicate the nominal credibility.

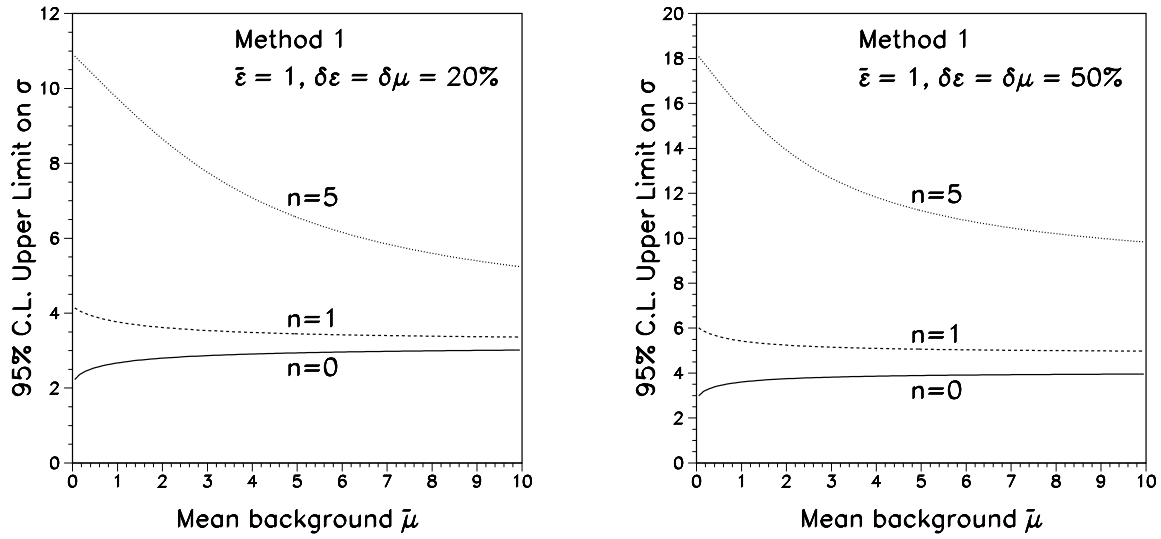

FIG. 5: Variation of the Method 1 reference posterior upper limit with mean background for several values of the observed number of events n. The relative uncertainty on the background and on the effective luminosity is 20% for the left plot and 50% for the right one.

that upper limits will not be exactly constant. The $n = 0$ case is illustrated in Fig. 5 for two values of the relative uncertainties on background and signal efficiency. For $n > 0$ the likelihood function still factorizes approximately since $(\mu + \epsilon\sigma)^n \approx \mu^n(1 + n\epsilon\sigma/\mu) \approx \mu^n$ for $\mu \gg \epsilon\sigma, n$. Thus upper limits will flatten out at large $\bar{\mu}$, as seen in Fig. 5. A comparison