DESCRIPTION OF CORRIGENDA OF A MONOGRAPH ON THE SIS MODEL

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An unfortunate error is made in Chapter 6 of the monograph [1]. The error occurs in the proof of Theorem 6.1. The asymptotic approximation of $h(n)$ given in (6.21) is used there to derive an asymptotic approximation of $\exp(h(n))$. In this step we derive an asymptotic approximation of $\exp(h(n))$ that is proportional to $\varphi(y_a(n))$. The result can be written in this form if the excluded terms from the Taylor expansion in (6.20) are negligibly small. The first excluded term is $-(y_a(n))^3/(6s_a)$, which is $\mathrm{o}(1)$ as $N \to \infty$ if $y_a(n) = \mathrm{o}(N^{1/6})$. This means that the condition $y_a(n) = \mathrm{o}(\sqrt{N})$ given in (6.10) in Theorem 6.1 is incorrect and should be changed to $y_a(n) = \mathrm{o}(N^{1/6})$.

A consequence of this error is that the conditions for validity of several of the approximations given in the monograph are incorrect. Two types of correction are required. The first one is that everywhere that the condition $y_1(n) = \mathrm{o}(\sqrt{N})$ occurs, it is changed to $y_1(n) = \mathrm{o}(N^{1/6})$, and the second one is that every occurrence of the condition $n = \mathrm{o}(N)$ is changed to $n = \mathrm{o}(N^{2/3})$. Both of these types of correction mean that the ranges of n-values for which the corresponding approximations hold are reduced. However, we emphasize that the approximations themselves are in no cases affected by the error. In particular, this means that all the results formulated as theorems in [1] are correct after the above-mentioned corrections have been introduced.

The brief description of corrections given above suffices for a reader who is only concerned with the results that we present, and not with the detailed mathematical derivations. Any reader who wants to follow the mathematical derivations is referred to the notes in [2]. They contain a detailed list of the corrections described above, and they also give changes in the derivations of two of the theorems in [1].

References

[1] I. Nåsell, *Extinction and Quasi-stationarity in the Stochastic Logistic SIS Model*, Lecture Notes in Mathematics **2022**, Springer Verlag, Berlin-Heidelberg, 2011.

[2] I. Nåsell, *List of corrigenda of a monograph on the SIS model*, `http://www.math.kth.se/~ingemar/SIS/corr2.pdf`

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