

Erratum for “*Drift and diffusion in phase space*”, by L. Chierchia and G. Gallavotti, in *Ann. Inst. H. Poincaré*, B-60, 1, 1994. Published in *Annales de l’Institut Poincaré*, B-68, 135, 1998.

- Statements c),d) on p. 71 and the reference to them in the following remark are not correct: this is due to a computational error (claiming that δ_{22} is exponentially small) in the corresponding proof in Appendix A13 referred to on p. 76 (6-th paragraph).
- Statement c) is never used; the statements are commented in §11 on p. 81,82: hence the discussion about lemma 4 is also invalid together with the remark 2 on p.84. The parts of §10, §11 unrelated to c), d) are unchanged.
- The only role of statement d) was that of making simpler the discussion of the application in §12 to *a priori* stable problems and it does not affect the results in the sections preceding §10. The application in §12 is therefore incorrect from (12.42) to the final formula (12.43).

Correcting the error in §10, i.e. getting a lower bound on the splitting angles becomes a nonperturbative problem. The techniques of appendix A13 were not developed to deal with such cases because the error made the nonperturbative analysis seem unnecessary. They have been developed in the subsequent paper [G] and pushed to a nonperturbative analysis in [GGM]: in the latter work (see §6,7) a correction to the lemma in §10 quoted above is proposed. Although the splitting is shown to be exponentially small it might be large enough for the method in §12 to apply; but this requires further analysis of the special case in §12, whose result at the moment remains invalid.

- A further error is in §8: the error is after (8.30) where the claim that the motion is rigid is incorrect because the time of evolution depends, here, on $\vec{\psi}$ itself. The error does not spoil the result but forces to take $\varepsilon_{\parallel}^{i+1}$ and ε_{\perp}^i to be of the same order of magnitude. The final estimate becomes even worse. Nevertheless, at least in some cases, better bounds can be obtained with the same technique: this is shown, in simple cases, in [G].

One of us, GG, is indebted to V. Gelfreich for pointing out the first error and to P. Lochak for stimulating and leading the detailed discussion that identified it.

References

- [G] Gallavotti, G.: *Twistless KAM tori, quasi flat homoclinic intersections, and other cancellations in the perturbation series of certain completely integrable hamiltonian systems. A review*, *Reviews on Mathematical Physics*, **6**, 343–411, 1994. A substantial part of this paper was developed in collaboration with L. Chierchia: see the acknowledgements.
- [GGM] Gallavotti, G., Gentile, G., Mastropietro, V.: *Pendulum: separatrix splitting*, preprint, downloadable at mp_arc@math.utexas.edu, #97-472, chaos-dyn 9709004, and <http://ipparco.roma1.infn.it>. Published as: *Separatrix splitting for systems with three time scales*, *Communications in Mathem. Physics*, **202**, 197–236,1999,
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