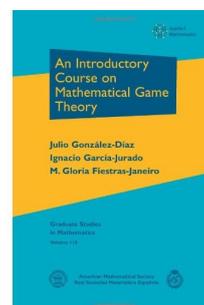


# An Introductory Course on Mathematical Game Theory

Graduate Studies in Mathematics, volume 115.

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We are grateful to the readers for contributing to improve this book by submitting errata, corrections, comments, and any other form of feedback.

## Errata

**Page 22, line 5:** Replace “Quasi-concavity implies concavity” with “Quasi-concavity is implied by concavity”.

**Page 22, line 10:** The assumption on the  $A_i$  sets in Proposition 2.2.2 should read:

i)  $A_i$  is a nonempty, convex, and compact subset of  $\mathbb{R}^{m_i}$ .

**Page 33, line -1 and Page 34, line 1:** Replace “(2,1), (1/2,1/2), and (2,1)” with “(2,1), (1/2,1/2), and (1,2)”.

**Page 52, footnote 20:** In the definition of P1, replace “ $x \in \mathbb{R}$ ” with “ $x \in \mathbb{R}^l$ ”.

**Page 64, line -11:** Replace “ $= 0 \geq 0$ ” with “ $\geq 0$ ”.

**Page 88, line 5:** Replace “ $\{r^i\}_{i \in I} \subset \mathbb{R}^m$ ” with “ $\{r_i\}_{i \in I} \subset \mathbb{R}$ ”.

**Page 89, line 4:** Replace “either  $R$  is not contained in” with “either  $R$  is contained in”.

**Page 114, Figure 3.3.5 b):** The entry in the position (2,1) of the table, corresponding to the strategy profile  $(MH, MM)$ , should be (65,75) instead of (75,65).

**Page 145, lines 6-7:** Replace “a continuum of actions” with “an infinite number of actions”.

**Page 181, lines 9-10:** The sentence after “i.e.,” in Proposition 4.4.1 should read “for each  $\hat{a}_{-i} \in \hat{A}_{-i}$  and each  $\hat{a}_i \in \hat{A}_i$ ,  $\hat{u}_i^{II}(\hat{a}_{-i}, \hat{a}_i^{II}) \geq \hat{u}_i^{II}(\hat{a}_{-i}, \hat{a}_i)$ , with strict inequality for some  $\hat{a}_{-i} \in \hat{A}_{-i}$ ”.

**Page 195, Example 4.6.1.** At the end of the first paragraph, add the sentence: “Take the strategy profile in which, at period  $t$ , player 1 plays  $l$  if his type is  $\tilde{\theta}_1$  and  $r$  if his type is  $\bar{\theta}_1$ .”

**Page 205, lines 16-18:** Replace “which would imply, in particular, that the players” with “which allows to model, in particular, situations where the players” and remove “that” in line 18.

**Page 205, Example 5.2.1.** Throughout the example, replace all the instances of “ $v$ ” with “ $V$ ”.

**Page 206, Definition 5.3.1:** Replace “compact” with “closed” in the properties of  $F$  and, further, introduce  $F_d$  and impose its compactness ( $F_d$  is currently introduced on page 207). This is to avoid a domain inconsistency in the proof of Theorem 5.3.3 on page 209 (with the sets  $U$  and  $f^A(U)$ ). Even if the above changes are not made, the result as stated is true, but then a (minor) modification of the proof would be needed to avoid the domain problem.

**Pages 210-211, proof of Proposition 5.3.4.** The paragraphs “Remove CAT” and “Remove IIA” should be replaced with:

**Remove CAT:** Let  $\varphi$  be the allocation rule that, for each bargaining problem  $(F, d)$ , selects the allocation  $\varphi(F, d) := d + \bar{t}(1, \dots, 1)$ , where  $\bar{t} := \max\{t \in \mathbb{R} : d + t(1, \dots, 1) \in F_d\}$  (the compactness of  $F_d$  ensures that  $\bar{t}$  is well defined). This allocation rule, known as the *egalitarian solution* (Kalai 1977), satisfies SYM and IIA, but, although  $\varphi$  always selects points in the boundary of  $F$ , it does not satisfy EFF. Consider now an allocation rule  $\hat{\varphi}$  that, for each two-player bargaining problem  $(F, d)$ , selects the Pareto efficient allocation closest to  $\varphi(F, d)$ . It is not difficult to check that  $\hat{\varphi}$  satisfies EFF, SYM, and IIA for two-player bargaining problems. Thus, Theorem 5.3.3 is not true if we drop CAT.

**Remove IIA:** The *Kalai-Smorodinsky solution*, which we present below, satisfies EFF, SYM, and CAT for two-player bargaining problems. Thus, Theorem 5.3.3 is not true if we drop IIA.

**Page 220, Figure 5.5.1:** The coordinates of the two lower points in the figure,  $(1500, 0, 500)$  and  $(0, 1500, 500)$ , should be replaced with  $(1500, 500, 0)$  and  $(500, 1500, 0)$ , respectively.

**Page 256, line above Eq. (5.10.1):** Replace “ $c$ ” with “ $v$ ”.

**Page 278, line 7:** Replace “ $\bar{x} = (\bar{x}_1, \bar{x}_2)$ ” with “ $\bar{x} = (\bar{x}_1, \bar{x}_2, \bar{x}_3)$ ”.

**Pages 265-267, proof of Theorem 5.11.2.** Replace the three instances of “ $f^{TR}(\hat{E}, c)$ ” with “ $f^{TR}(\hat{E}, d)$ ”.

**Page 278, line 10:** Replace “ $C(v) = \text{conv}\{(2, 6, 3), (0, 6, 5), (0, 13/2, 9/2), (2, 13/2, 5/2)\}$ ” with “ $C(v) = \text{conv}\{(2, 6, 3), (0, 6, 5), (0, 13/2, 9/2), (5/2, 13/2, 2), (2, 7, 2)\}$ ”.

**Page 280, line 20:** Replace “minimun” with “minimum”.

**Page 283, line -9:** Replace “optimal ordering cost” with “optimal ordering size”.

**Page 285, line 18:** Replace “ $m \in \mathbb{R}^m$ ” with “ $m \in \mathbb{R}^N$ ”.

**Page 285, line 20:** Replace “ $S \subset \mathbb{N}$ ” with “ $S \subset \mathbb{N}$ ”.

**Page 293, line 6:** Replace “ecole” with “école” and “Enonometrica” with “Econometrica”.

**Page 296, line 21:** Replace “Mathematizues” with “Mathematiques” and “Theorie” with “Théorie”.

**Page 299, line -12:** Replace “Brower” with “Brouwer”.

**Page 307, line 1:** S. Tijs is missing in the reference. The list of authors should read “van Gellekom, J. R. G., Potters, J. A. M., Reijnierse, J. H., Engel, M. C. and Tijs, S.” Accordingly, on page 313, the number 277 should be added to Tijs’s entries.