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Corrigendum: on a conjecture of Kontsevich and variants of Castelnuovo's lemma

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In the Mathematical Review of a previous article [Lan99], Gizatullin pointed out that the proof as written is incomplete for the complex case because the possibility of a certain equation vanishing identically was ignored. The following argument addresses the missing case. Note that it is simply another iteration of the argument already present in the article.

Let $\vec{b} = (b_3/a_3 - b, b_4/a_4, \ldots, b_n/a_n)$, $\vec{a}_\gamma = (a^3_\gamma, \ldots, a^n_\gamma)$, and $\vec{p}_\gamma = (p^3_\gamma, \ldots, p^n_\gamma)$. Then the equation obtained in the paragraph below (2.9) is

$$\Sigma_\gamma(\vec{b} \cdot \vec{a}_\gamma)\vec{p}_\gamma = 0.$$

If all the coefficients of this equation are zero, there are two possibilities: either $\vec{b} = 0$, which would imply that the second and third rows of the matrix A were equal and thus a contradiction, or the quantities $\vec{a}_\gamma$ were not linearly independent. If this occurs, change bases such that the first r are independent and the rest are zero. Let $\vec{b}\,' = (b_3/a_3 - b, b_4/a_4, \ldots, b_r/a_r)$, $\vec{a}\,'_s = (a^3_s, \ldots, a^r_s)$, and $\vec{p}\,'_\gamma = (p^3_\gamma, \ldots, p^r_\gamma)$. Since the quantities $\vec{a}\,'_s$ are independent, this implies $\vec{b}\,' = 0$ and thus a contradiction as in the case above.

Reference

Lan99 J. M. Landsberg, *On a conjecture of Kontsevich and variants of Castelnuovo's lemma*, Compositio Math. **115** (1999), 205–230; Math. Review 1668998 (99m:14101).

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