Proof reading for "Matrix identities involving multiplication and transposition" by Auinger et al

Location	Type	In the proofs	In the original	Should be
Throughout	Editor's in-	non-finitely based	nonfinitely based	As in the proofs
the text	tervention			(we accept the change)
P.1, Back-	Editor's in-	much attention as well:	much attention as well,	As in the proofs
ground and	tervention	see, for instance	see, for instance	(we accept the change)
Motivation,				
line +9				
P.1, footnote,	Update	21000	21000	21101
line +4				
P.1, footnote,	Update	Faculty of Mathematics	Faculty of Mathematics	Institute of Mathematics
line +5		and Mechanics, Ural State	and Mechanics, Ural State	and Computer Science,
		University	University	Ural Federal University
P.1, footnote,	Update	620083	620083	620000
line +6				
P.2, line +21	Typo (our	may be a summarized	may be a summarized	may be summarized
	fault)			
P.2, Theorem,	Editor's in-	None of the following sets	Each of following sets of	As in the proofs
line +1	tervention	of matrix identities admits	matrix identities admits no	(we accept the change)
		a finite identity basis:	finite identity basis:	
P.2, Theorem,	Editor's in-	the identities for	the identities of	As in the proofs
lines $+2$, $+4$,	tervention			(we accept the change)
+6, +9 (4				
times)				
P.3, line +5	Editor's in-	(displayed formula)	(inline formula)	As in the proofs
	tervention			(we accept the change)
P.3, line +18	Editor's in-	then so is u^* .	then so is $(u)^*$.	As in the original (we do
	tervention			not accept the change)
P.3, line +20	Editor's in-	$u \mapsto u^*$.	$u \mapsto (u)^*$.	As in the original (we do
	tervention			not accept the change)
P.3, line -3	Typo (our	A variety is is said to be	A variety is is said to be	A variety is said to be
	fault)			
P.4, lines 1–2	Editor's in-	forming direct products	forming direct products,	As in the proofs
	tervention	and taking unary subsemi-	taking unary subsemi-	(we accept the change)
		groups	groups	
continued on next page				

continued from Location	Type	In the proofs	In the original	Should be
P.4, line -2	Editor's in-	$if p_{jk} = 0,$	$if p_{jk} = 0;$	As in the proofs
r.4, iiiie – 2	tervention	$\prod_{i} p_{jk} = 0,$	$\prod_{i} p_{jk} = 0,$	(we accept the change)
P.5, line +4	Editor's in-	If the group 9 involved	If the involved group 9	As in the proofs
F.3, IIIIe +4	tervention	If the group 9 involved	If the involved group 9	(we accept the change)
D5 diamlar	Editor's in-	othomyico	oth omision	As in the proofs
P.5, display		otherwise,	otherwise;	•
(1.1)	tervention	and an and that will be		(we accept the change)
P.5, line +1	Editor's in-	semigroup that will be	semigroup that will be	As in the proofs
after display	tervention	quite useful is	quite useful in the sequel is	(we accept the change)
(1.1)			•••	
P.5, line -5	Editor's in-	has dimension $n-1$,	has dimension $n-1$	As in the proofs
	tervention	whence	whence	(we accept the change)
P.6, line –16	Editor's in-	The following easy obser-	The following easy obser-	As in the proofs
	tervention	vation will be useful as it	vation will be useful in the	(we accept the change)
		helps	sequel as it helps	
P.6, line -8	Editor's in-	$H(\mathfrak{T}) \in var H(S)$, and so	$H(\mathfrak{T}) \in \text{var} H(\mathfrak{S})$. Since	As in the proofs
	tervention	$H(var S) \subseteq var H(S).$	this holds for an arbitrary	(we accept the change)
			$T \in \text{var } S$, we conclude	
			that $H(var\mathbb{S})\subseteqvarH(\mathbb{S})$.	
P.7, line +1	Editor's in-	there exists a group $\mathcal{G} \in$	there exists a group $\mathfrak{G} \in$	As in the proofs
	tervention	$\mathbf{V} \setminus \mathrm{H}(\mathbf{V})$	V for which $\mathfrak{G} \notin H(\mathbf{V})$.	(we accept the change)
P.7, line –10	Editor's in-	denotes the $n \times n$ -matrix	denotes the $n \times n$ -matrix of	As in the proofs
	tervention		the form	(we accept the change)
P.7, matrix	Editor's in-	:(produced by \vdots)	· . (produced by \ddots)	
·	tervention	. (produced by \vdots)	(produced by \adots)	As in the original (we do
$M_n(g)$, entry	tervention			not accept the change)
(4,4)	Editor's in-	(This assetmentian is in	(This construction is in	A simple and of
P.7, line -8		(This construction is in	(This construction is in	As in the proofs
	tervention	a sense a combination of	a sense a combination of	(we accept the change)
		those of [3] and [53].)	those of the first and the	
			third authors' papers [3]	
DO 1' (0 011		and [53].)	
P.8, line +6	Overfull	1	The row of dots is too long	
P.8, line -9	Editor's in-	As $2k < n$ according to	Using that $2k < n$ accord-	As in the proofs
	tervention		ing to	(we accept the change)
P.9, line +3	Editor's in-	For each <i>i</i> with	For each i such that	As in the proofs
	tervention			(we accept the change)
continued on next page				

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Location	Type	In the proofs	In the original	Should be
P.10, line +11	Editor's in-	such that $\mathfrak{G} \in \mathbf{V} \setminus \mathrm{P}_d(\mathbf{V})$	such that $\mathcal{G} \in \mathbf{V}$ but $\mathcal{G} \notin$	As in the proofs
	tervention		$P_d(\mathbf{V})$	(we accept the change)
P.10, line +18	Editor's in-	These words have already	These words already have	As in the proofs
	tervention	been used	been used	(we accept the change)
P.10, line -14	Editor's in-	Let x_1, x_2, \ldots be a se-	Let $x_1, x_2, \ldots, x_n, \ldots$ be a	As in the proofs
	tervention	quence of letters.	sequence of letters.	(we accept the change)
P.10, line -8	Editor's in-	Aiming at a contradiction,	Arguing by contradiction,	As in the proofs
	tervention	suppose	suppose	(we accept the change)
P.11, line +2	Editor's in-	in Fig. 1 (left).	shown in the left hand	As in the proofs
	tervention		part of Fig. 1	(we accept the change)
P.11, lines 2–	Editor's in-	All odd-numbered columns	All odd columns	As in the proofs
3	tervention			(we accept the change)
P.11, line +4	Editor's in-	All even-numbered	All even columns	As in the proofs
	tervention	columns		(we accept the change)
P.11, line +5	Editor's in-	to	to the trans-	We do not accept the
	tervention	$(1,2,\ldots,r,\ldots,1,2,\ldots,r)^t$	pose of the row	change in the proposed
		where the block $1, 2, \ldots, r$	$(1,2,\ldots,r,\ldots,1,2,\ldots,r)$	form. The notation $()^t$
		occurs r times.	in which the block	for the transpose is incon-
			$1, 2, \ldots, r$ occurs r	sistent with the notation
			times.	elsewhere in the paper. We
				suggest:
				to the transpose of
				$(1,2,\ldots,r,\ldots,1,2,\ldots,r)$
				where the block $1, 2, \ldots, r$
				occurs r times.
P.11, line +8	Editor's in-	(shown in Fig. 1, right)	(shown in the right hand	As in the proofs
	tervention		part of Fig. 1)	(we accept the change)
P.11, line +11	Editor's in-	Let v_t be the word in the $t^{\rm th}$	Let v_t be the word in the $t^{\rm th}$	As in the proofs
	tervention	row of M_A .	row of the matrix M_A .	(we accept the change)
P.12, line +13	Editor's in-	$\varphi(q)$ is not 0; say $\varphi(p) \neq$	$\varphi(q)$ is not equal to 0;	As in the proofs
	tervention	0.	(without loss of generality)	(we accept the change)
			assume that $\varphi(p) \neq 0$.	
P.12, line -15	Editor's in-	which may	that may	As in the proofs
	tervention			(we accept the change)
P.13, foot-	Editor's in-	the expression that follows	the following expression is	As in the proofs
note, line +1	tervention	is not	not	(we accept the change)
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		-	- J	
P.14, line +14	Editor's in-	the six matrices	the 6 matrices	As in the proofs
	tervention			(we accept the change)
P.15, line +10	Editor's in-	have recently been ob-	have been recently ob-	As in the proofs
	tervention	tained	tained	(we accept the change)
P.15, line -15	Editor's in-	\dots for each $a \in S$.	for each element $a \in S$.	As in the proofs
	tervention			(we accept the change)
P.16, line +3	Editor's in-	This implies that such a T	This implies that such T	As in the proofs
	tervention	•••	_	(we accept the change)
P.16, line -8	Editor's in-	For every $g \in \mathcal{F} \dots$	For every element $g \in \mathcal{F}$	As in the proofs
·	tervention			(we accept the change)
P.17, line +4	Editor's in-	hence belongs to var 9 and	whence this group belongs	As in the proofs
•	tervention	so is locally finite.	to var 9 and so is locally fi-	(we accept the change)
		January January	nite.	(
P.17, line -2	Editor's in-	Then for $a \in \mathbb{S}$	Then for an arbitrary $a \in S$	As in the proofs
,	tervention			(we accept the change)
P.18, line +1	Editor's in-	A ring involution	An involution of the ring	As in the proofs
,	tervention	· ·	J	(we accept the change)
P.19, line –1	Editor's in-	$\operatorname{GL}_2(\mathfrak{K})$ is contained in	$\operatorname{GL}_2(\mathfrak{K})$ is contained in	As in the proofs
,	tervention	var S but not in var H(S)	var 8 but is not contained in	(we accept the change)
			$\operatorname{var} \mathrm{H}(\mathbb{S})$	(
P.20, line -11	Editor's in-	\dots onto $F(A)$	to the space $F(A)$	As in the proofs
,	tervention	()	()	(we accept the change)
P.20, line -11	Editor's in-	onto $N(A)^{\perp}$.	to the space $N(A)^{\perp}$.	As in the proofs
1.20, 1110	tervention	6116 11 (11)	to the space 14 (11)	(we accept the change)
P.20, lines -8	Editor's in-	since $A = (P_1P_2)^{\dagger}$ (see	since $A = (P_1 P_2)^{\dagger}$, see	As in the proofs
and -7	tervention	[38, Exercise 5.15.9a]).	[38, Exercise 5.15.9a].	(we accept the change)
P.21, line +13	Editor's in-	This might incline one	This might have provoked	As in the proofs
1.21, IIIIC 113	tervention	This hight menne one	one	(we accept the change)
P.21, line +19	Editor's in-	The characteristic of K is	The characteristic of K is	As in the proofs
1.21, IIIIC +19	tervention	not 2, whence the group	not 2 whence the group	(we accept the change)
P.22, lines 1–	Editor's in-	and the desired conclusion	whence the desired conclu-	
2 nines 1–	tervention	follows by reasoning as in	sion follows by the reason-	As in the proofs (we accept the change)
4	tervention		· · · · · · · · · · · · · · · · · · ·	(we accept the change)
D22 line + 9	Editor's in	step 1 Then $\begin{pmatrix} a & b \end{pmatrix}$ is a typical ma	ing as in Step 1 Then $\begin{pmatrix} a & b \end{pmatrix}$ is a typical ma	As in the proofs
P.23, line +8	Editor's in-	Then $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ is a typical matrix in Associated $\begin{pmatrix} d & b \\ d & b \end{pmatrix}$ is one	Then $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ is a typical matrix in A as $\begin{pmatrix} d & b \\ d & d \end{pmatrix}$ is such in	As in the proofs
	tervention	trix in Asc, and $\begin{pmatrix} d & b \\ c & a \end{pmatrix}$ is one	trix in Asc, $\begin{pmatrix} d & b \\ c & a \end{pmatrix}$ is such in	(we accept the change)
		in Desc	Desc	
				continued on next page

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Location	Type	In the proofs	In the original	Should be	
P.23, line −6	Editor's in-	$Asc \cdot A^n \cap Desc \cdot B^m = \emptyset.$	$\operatorname{Asc} \cdot A^n \cap \operatorname{Desc} \cdot B^m = \varnothing.$	As in the proofs	
	tervention			(we accept the change)	
P.24, line +2	Editor's in-	that still satisfy $u'(A, B) =$	that still fulfil $u'(A, B) =$	As in the proofs	
	tervention	v'(A,B). Observe that nei-	v'(A, B). Observe that	(we accept the change)	
		ther u' nor v' is empty	none of the words u' and v'		
			are empty		
P.24, line +3	Editor's in-	the polynomial ring	the polynomial ring	As in the proofs	
	tervention	$\mathcal{K}[x]$, which is not true.	$\mathcal{K}[x]$ which is not true.	(we accept the change)	
P.24, line +6	Editor's in-	$b^{\ell_1}a^{k_1}\cdots b^{\ell_t}a^{k_t}$,	$b^{\ell_1}a^{k_1}\cdots b^{\ell_t}a^{k_t}$	As in the proofs	
	tervention			(we accept the change)	
P.24, line +7	Typo (our	$b^{\ell_1}a^{k_1}\cdots b^{\ell_{t-1}}a^{k_{t-1}}b^{k_t},$	$b^{\ell_1}a^{k_1}\cdots b^{\ell_{t-1}}a^{k_{t-1}}b^{k_t}$	$b^{\ell_1}a^{k_1}\cdots b^{\ell_{t-1}}a^{k_{t-1}}b^{\ell_t},$	
	fault) +				
	Editor's in-				
	tervention				
P.24, line +9	Editor's in-	Desc, while in case (3.15),	Desc while in case (3.15)	As in the proofs	
	tervention			(we accept the change)	
P.24, line +18	Editor's in-	say z , contains	z, say, contains	As in the proofs	
	tervention			(we accept the change)	
P.24, lines	Editor's in-	distinct, so $u_{ij} - v_{ij}$ is a	distinct whence $u_{ij} - v_{ij}$	As in the proofs	
-12 and -11	tervention	non-zero polynomial. Now	is a non-zero polynomial.	(we accept the change)	
		take any $\lambda \in \mathcal{K}$ and set	Now take any $\lambda \in \mathcal{K}$ and		
		$z(\lambda) = \begin{pmatrix} 1 & 0 \\ \lambda^2 & \lambda \end{pmatrix}$. If	set $z(\lambda) = \begin{pmatrix} 1 & 0 \\ \lambda^2 & \lambda \end{pmatrix}$. If the		
			equality		
P.24, line −9	Editor's in-	then λ must	holds then λ must	As in the proofs	
	tervention			(we accept the change)	
P.24, line -8	Editor's in-	finitely many λ in \mathcal{K} .	finitely many elements λ of	As in the proofs	
	tervention		K .	(we accept the change)	
P.25, line +8	Editor's in-	We start by considering	We start with considering	As in the proofs	
D25 11 0	tervention			(we accept the change)	
P.25, line -8	Editor's in-	and yields, in fact, a	•	As in the proofs	
D26 11 11	tervention	stronger	stronger	(we accept the change)	
P.26, line –11	Editor's in-	'only if' part of item 2,	'only if' part of item (2),	As in the proofs	
D07 1: 0	tervention		.1 . 7 .0	(we accept the change)	
P.27, line +2	Editor's in-	the exponent d of	the exponent d of	As in the proofs	
	tervention	$\operatorname{GL}_2(\mathfrak{K})$, so $\alpha^d = 1$.	$\operatorname{GL}_2(\mathfrak{K})$ whence $\alpha^d = 1$.	(we accept the change)	
				continued on next page	

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Location	Type	In the proofs	In the original	Should be
P.28, line -16	Editor's in-	The 2×2 -matrices over	The 2×2 -matrices over	As in the proofs
	tervention	an infinite field satisfy non-	an infinite field fulfill non-	(we accept the change)
		trivial	trivial	
P.29, lines 4–	Editor's in-	is closed under multipli-	is closed under multi-	As in the proofs
5	tervention	cation and transposition, so	plication and transposition	(we accept the change)
			whence	
P.29, line +16	Editor's in-	a set of edges such that	a set of edges so that ev-	As in the proofs
	tervention	every vertex	ery vertex	(we accept the change)
P.29, line +17	Editor's in-	then A is said to be a Hall	A is said to be a Hall ma-	As in the proofs
	tervention	matrix	trix	(we accept the change)
P.30, line +6	Editor's in-	(from the top right to the	(the diagonal from the top	As in the proofs
	tervention	bottom left corner).	right to the bottom left cor-	(we accept the change)
			ner).	
P.31, line +12	Editor's in-	in the latter.	in the latter one.	As in the proofs
	tervention			(we accept the change)
P.31,	Typo (our	grants 10-01-00524.	grants 10-01-00524.	grant 10-01-00524.
Acknow-	fault)			
ledgements,				
line −1				
P.32, item	Typo (our	The semigroups of Hall re-	The semigroups of Hall re-	The semigroup of Hall re-
[27], line +1	fault)	lations.	lations.	lations.