Erratum to *Rainbow Turán Problems*, by P. Keevash, D. Mubayi, B. Sudakov and J. Verstraëte

In the proof of the upper bound in Theorem 1.5 we consider a graph G on n vertices that is properly coloured with no rainbow C_6. We let G' be a bipartite subgraph of G with $e(G') \geq e(G)/2$. We say that a subgraph $K_{2,t}$ of G' is maximal if it is not contained in any $K_{2,t'}$ in G' with $t' > t$. Then we claim that if G' contains a maximal $K_{2,s}$ and a maximal $K_{2,t}$ with $s, t \geq 9$ then they must be edge-disjoint. However, the argument that we give for this claim is incorrect.

We correct the proof as follows. Suppose that G' has bipartition (A, B). We claim that one cannot find a maximal $K_{2,s} = (A_1, B_1)$ and a maximal $K_{2,t} = (A_2, B_2)$ sharing an edge, where $A_1, A_2 \subset A$ have size 2, $B_1 \subset B$ has size $s \geq 9$ and $B_2 \subset B$ has size $t \geq 9$. The proof of this claim is exactly that given for the first case ($x \in A_1 \cap A_2$ and $y \in B_1 \cap B_2$) in the paper: such a configuration leads a rainbow C_6, which is a contradiction. Now suppose that (A', B') is a maximal $K_{2,t}$ with $A' = \{a_1, a_2\} \subset A$ and $B' \subset B$ of size $t \geq 9$. Delete from G' all edges joining a_1 to B'. Repeat this process as long as there is any (maximal) $K_{2,t}$ with $t \geq 9$. Note that we have considered mutually disjoint sets of edges and deleted half of each, so we have deleted at most half of the edges of G'. The remaining graph G'' contains no $K_{2,9}$ with 2 points in A and 9 points in B. Similarly, we can delete at most half of the edges of G'' to obtain a graph G''' that contains no $K_{2,9}$ with 2 points in B and 9 points in A, and so no $K_{2,9}$ at all.

Now, as in the paper, we apply Lemma 3.1 to G''' and deduce that it has average degree $d''' < (1 + o(1))(87n)^{1/3}$. It follows that $e(G) \leq 2e(G') \leq 4e(G'') \leq 8e(G''') = 4d''n < 18n^{4/3}$ for large n. Therefore the upper bound in Theorem 1.5 still holds, with a larger value of the constant c_2.

We also need to increase the constant in remark (1) following the proof of Theorem 1.5. It follows that an edge-coloured bipartite graph on $2n$ vertices with no rainbow C_6 has at most $\frac{1}{2}18(2n)^{4/3} < 24n^{4/3}$ edges (for large n). Applying this to a bipartite Cayley graph we see that in any abelian group of order n, a B_3^*-set can have at most $24n^{1/3}$ elements.