Addendum to
"Explicit matrices for irreducible representations of Weyl groups"

John R. Stembridge ⟨jrs@umich.edu⟩

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In the paragraph preceding Lemma 2.4 of [1], we defined an ordering $s_1, \dots, s_n$ of the simple reflections to be graceful if for all $i < j < k$, we have i and k adjacent in the Coxeter graph (i.e., s_i and s_k do not commute) only if j and k are also adjacent. We also wrote that it is "easy to check that the standard order we have chosen for each Weyl group is graceful." However, this is not correct for the orderings we used for the Weyl groups of type E; in fact, the triple $(i, j, k) = (1, 2, 3)$ clearly violates the condition.

One way to fix this error is simply to interchange s_2 and s_3 in the standard ordering. The remainder of the paper remains completely unaffected; however, this does change the matrices that our algorithm would construct.

A better way to fix the error is to improve the definition. We should instead define the ordering $s_1, \dots, s_n$ to be graceful if for all $i < j$ such that i and j are adjacent in the Coxeter graph, each of $s_i, s_{i+1}, \dots, s_{j-1}$ belong to distinct irreducible components of the parabolic subgroup generated by $s_1, s_2, \dots, s_{j-1}$.

The orderings we used for the simple reflections in the Weyl groups of type E do satisfy this weaker condition, Lemma 2.4 remains valid as stated, and the first paragraph of the proof now simplifies to the following:

> "For clarity, we will assume that $r = n - 3$; the general case follows by essentially the same argument. Given that the ordering is graceful, it follows that W_{n-1} is a direct product of parabolic subgroups, say $W_I \times W_J$, with generating sets I and J that include s_{n-1} and s_{n-2}, respectively."

No other changes are needed. In particular, the statements and proofs of Proposition 2.5 and Corollary 2.6 are valid in their original forms.

References

[1] J. R. Stembridge, *Explicit matrices for irreducible representations of Weyl groups*, Represent. Theory **8** (2004), 267–289.