

Preview: PACE 2026

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<https://pacechallenge.org/>

Scientific Topic: Agreement Forests

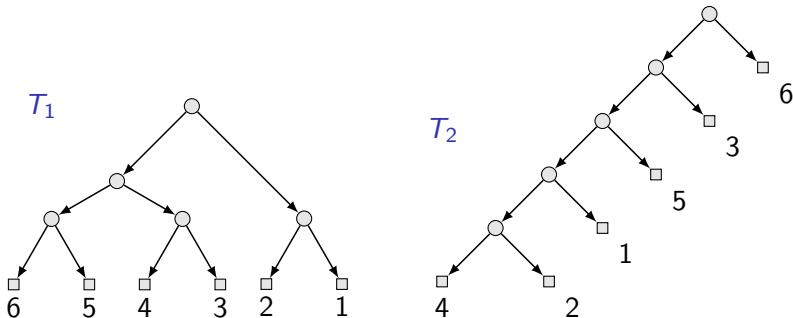
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- ▶ A **phylogenetic tree** is a rooted, bijectively leaf-labelled out-branching.

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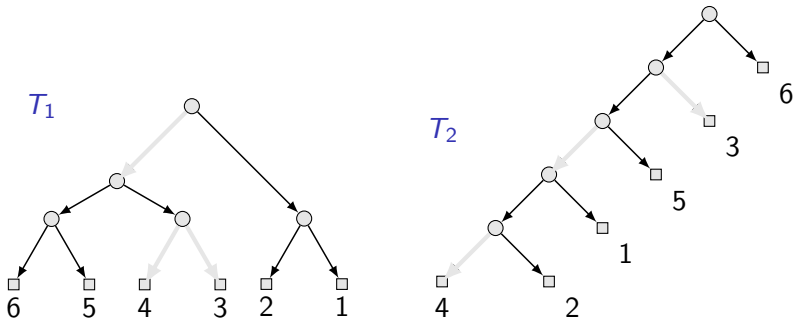
- ▶ A **phylogenetic tree** is a rooted, bijectively leaf-labelled out-branching.
- ▶ An **agreement forest** of t phylogenetic trees T_1, T_2, \dots, T_t is any forest of phylogenetic trees that can be obtained from each T_i by removing directed edges (+ “cleanup”)



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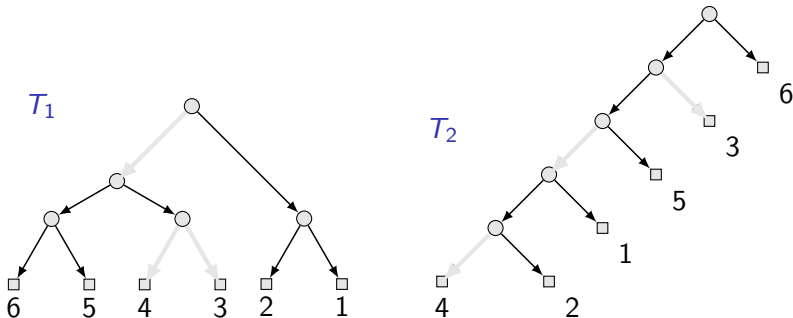
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Results for $t = 2$, $\text{MAF}(T, T') = k$

- ▶ NP-hard Bordewich & Semple, '04
- ▶ $O(2.35^k n)$ time Chen & Wang '13
Mestel, Chaplick, Kelk, Meuwese '24
($O(2^k n)$ time claimed) Whidden '13
- ▶ problem kernel with $28k$ taxa Bordewich & Semple '05
improved to $9k$ taxa Kelk, Linz, Meuwese '23

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Note

No other parameterization explored!

Organization and Data

Exact/Parameterized Track

- ▶ **t trees**
- ▶ **idea:** instances accompanied by parameters
(with proof, e.g. decomposition)
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Generated Data

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Timeline

mostly follows previous PACE-instances

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- October '25 Definition of input and output formats
- November '25 Tiny test set and verifier are provided
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– good luck and an enjoyable competition –