Weighted shifts on directed trees: the joint backward extensions

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Weighted shifts on ℓ^2 are well known in operator theory and serve as important class of examples. In [1], the concept was generalised to *weighted shifts on directed trees*, where we replace the linear order of coordinates by a more involved graph structure. The study of backward extension is about whether a given family of weighted shifts on directed trees can be extended to a weighted shift on a single tree, preserving some operator-theoretic property. Among the considered properties are subnormality, power hyponormality and complete hyperexpansivity. In the case of the first two classes the existence of joint backward extension for a family does not depend neither on the additional structure of an enveloping tree nor on any deep interrelation between the given operators.

The results come from my PhD dissertation (2023) written under the supervision of prof. Jan Stochel and were also published in [2, 3].

[1] Z. Jabłoński, I. B. Jung, J. Stochel: Weighted shifts on directed trees, *Memoirs of AMS*, 1017 (2012), 107p.

[2] P. Pikul: Backward extensions of weighted shifts on directed trees, *Integr. Equ. Oper. Theory*, 94 (2022), Art. 26.

[3] P. Pikul: Joint backward extension property for weighted shifts on directed trees, *Linear Algebra Appl.*, 665 (2023), 253–290.