several bounds and consistency results, e.g. the consistency of $s < s_{1/2}$ and $s_{1/2} < \non(N)$, as well as several results about possible values of $s_{1/2}$. Most proofs are of a combinatorial nature; one of the more sophisticated proofs utilises a creature forcing poset already introduced in Chapter B.

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Ari Meir Brodsky, *A Theory of Stationary Trees and the Balanced Baumgartner–Hajnal–Todorcevic Theorem for Trees*. University of Toronto, Canada, 2014. Supervised by Stevo Todorcevic. MSC: Primary 03E02, Secondary 03C62, 05C05, 05D10, 06A07. Keywords: combinatorial set theory, nonspecial trees, stationary trees, stationary subtrees, partial orders, diagonal union, regressive function, normal ideal. Pressing-Down Lemma, balanced partition relation, partition calculus, Erdős–Rado Theorem, Baumgartner–Hajnal–Todorcevic Theorem, elementary submodels, nonreflecting ideals, very nice collections.

Abstract
Building on early work by Stevo Todorcevic, we develop a theory of stationary subtrees of trees of successor-cardinal height. We define the diagonal union of subsets of a tree, as well as normal ideals on a tree, and we characterize arbitrary subsets of a nonspecial tree as being either stationary or nonstationary.

We then use this theory to prove the following partition relation for trees:

**Main Theorem.** Let $\kappa$ be any infinite regular cardinal, let $\xi$ be any ordinal such that $2^{\|\xi\|} < \kappa$, and let $k$ be any natural number. Then

$$non-(2^{<\kappa})^{+}-special ~ tree \rightarrow (\kappa + \xi)^2_k.$$  

This is a generalization to trees of the Balanced Baumgartner–Hajnal–Todorcevic Theorem, which we recover by applying the above to the cardinal $(2^{<\kappa})^{+}$, the simplest example of a non-$(2^{<\kappa})^{+}$-special tree.

An additional tool that we develop in the course of proving the Main Theorem is a generalization to trees of the technique of nonreflecting ideals determined by collections of elementary submodels.

As a corollary of the Main Theorem, we obtain a general result for partially ordered sets:

**Theorem.** Let $\kappa$ be any infinite regular cardinal, let $\xi$ be any ordinal such that $2^{\|\xi\|} < \kappa$, and let $k$ be any natural number. Let $P$ be a partially ordered set such that $P \rightarrow (2^{<\kappa})^{+}_{2^{<\kappa}}$. Then

$$P \rightarrow (\kappa + \xi)^2_k.$$  

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