RESEARCH STATEMENT

Assaf Rinot

I am a post-doc at the center for advanced studies in mathematics, at Ben-Gurion university, Be'er Sheva, Israel.

My research focuses on combinatorial set theory. More specifically, my main interest is the study of the combinatorics of concepts which were first discovered to hold in Gödel's constructible universe.

Recently, we introduced a few variations of Jensen's square principle, which we dub as *Ostaszewski's squares*. First, recall the original notion: $\square_\kappa$ asserts the existence of a sequence $\overrightarrow{C} = \langle C_\alpha \mid \alpha < \kappa^+ \rangle$ such that C_α is a club in α of type $\leq \kappa$, and for which $C_\beta = C_\alpha \cap \beta$ whenever $\sup(C_\alpha \cap \beta) = \beta$. Next, we say that $\overrightarrow{C}$ is an Ostaszewski $\square_\kappa$-sequence, if, in addition, for every limit $\theta < \kappa$, every club $D \subseteq \kappa^+$, and every unbounded $A \subseteq \kappa^+$, there exists some $\alpha < \kappa^+$ for which all of the following holds:

(1) $\mathrm{otp}(C_\alpha) = \theta$;
(2) $\mathrm{acc}(C_\alpha) \subseteq D$;
(3) $\mathrm{nacc}(C_\alpha) \subseteq A$.

Here, $\mathrm{acc}(C_\alpha)$ stands for the set $\{\beta \in C_\alpha \mid \sup(C_\alpha \cap \beta) = \beta\}$, and $\mathrm{nacc}(C_\alpha)$ stands for $\{\beta \in C_\alpha \mid \sup(C_\alpha \cap \beta) \neq \beta\}$.

We've been studying the behavior of Todorcevic's minimal walks along such sequences, and also reformulated many of the constructions of higher Souslin trees, as applications of Ostaszewski's squares. Finally, our main recent result is that the Ostaszewski square follows from the usual square, assuming fragments of GCH.