which is, nevertheless, not a strong P-point. These results answer the questions of M. Canjar and C. Laflamme.

1. Preliminaries

We use standard notation, ω^ω denotes all functions from ω to ω, $[\omega]^\omega$ denotes all infinite subsets of ω while $[X]^{<\omega}$ denotes all finite subsets of X. We write $A \subseteq^* B$ if $|A \setminus B| < \omega$ and $f \leq^* g$ if $|\{n : f(n) > g(n)\}| < \omega$. The cardinal number $\mathfrak{b}$ denotes the least cardinality of an unbounded subset of $(\omega^\omega, \leq^*)$ and $\mathfrak{d}$ denotes the least cardinality of a dominating (cofinal) subset of $(\omega^\omega, \leq^*)$. $\chi(\mathcal{U})$ denotes the *character* of $\mathcal{U}$, i.e. the least cardinality of a basis of the (ultra)filter $\mathcal{U}$.

1.1. **Definition** ([10])**.** A nonprincipal ultrafilter $\mathcal{U}$ is a *P-point* if for any sequence $\langle X_n : n < \omega \rangle \subseteq \mathcal{U}$ there is an $X \in \mathcal{U}$ such that $(\forall n < \omega)(X \subseteq^* X_n)$.

1.2. **Definition** ([9])**.** An ultrafilter $\mathcal{U}$ is *rapid* if the family $\{e_X : X \in \mathcal{U}\}$ of increasing enumerations of sets in $\mathcal{U}$ is a dominating family of functions in $(\omega^\omega, \leq^*)$.

1.3. **Definition.** Let $\mathcal{U}, \mathcal{V}$ be ultrafilters on ω.

(i) (Rudin-Keisler ordering, [4]) $\mathcal{U} \leq_{RK} \mathcal{V}$ if there is a function $f : \omega \to \omega$ such that $\mathcal{U} = f_*(\mathcal{V}) = \{A \subseteq \omega : f^{-1}[A] \in \mathcal{V}\}$. In this situation we also say that $\mathcal{U}$ is an RK-predecessor of $\mathcal{V}$.

(ii) (Rudin-Blass ordering, [6]) $\mathcal{U} \leq_{RB} \mathcal{V}$ if $\mathcal{U} \leq_{RK} \mathcal{V}$ and the function witnessing this can be chosen to be finite-to-one. As above we say that $\mathcal{U}$ is an RB-predecessor of $\mathcal{V}$.

This is an annotation with an Appearance Stream: $2^{\aleph_0} = \aleph_1$.

1.4. **Definition** ([8])**.** *Mathias forcing* is the partial order where conditions are pairs (a, X) with $a \in [\omega]^{<\omega}$ and $X \in [\omega]^\omega$ ordered as $(a, X) \leq (b, Y)$ if $b \sqsubseteq a$, $X \subseteq Y$ and $a \setminus b \subseteq Y$. Given an ultrafilter $\mathcal{U}$, *relativized Mathias forcing* $\mathbb{M}_\mathcal{U}$ is the subset of Mathias forcing consisting of conditions whose second coordinate is in $\mathcal{U}$.

1.5. **Remark.** Mathias forcing can be written as an iteration $\mathbb{M} = \mathcal{P}(\omega)/\text{fin} * \mathbb{M}_{\dot{G}}$, where $\dot{G}$ is a name for the generic ultrafilter added by the first forcing. It is easy to verify that the generic real for relativized Mathias forcing $\mathbb{M}_\mathcal{U}$, which is the union of the first coordinates of conditions in the generic filter, is a pseudointersection of $\mathcal{U}$.

2. Characterization of Canjar ultrafilters

2.1. **Definition.** A *Canjar ultrafilter* is an ultrafilter on ω such that $\mathbb{M}_\mathcal{U}$ does not add dominating reals.

The following observation will motivate the definition of a strong P-point.

2.2. **Observation.** *An ultrafilter $\mathcal{U}$ is a P-point if and only if for any descending sequence of sets $\langle X_n : n < \omega \rangle$ from $\mathcal{U}$ there is an interval partition $\langle I_n : n < \omega \rangle$ of ω such that*

$$X = \bigcup_{n<\omega} (I_n \cap X_n) \in \mathcal{U}.$$