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Wallman's method

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WALLMAN'S METHOD

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Let $\underline{R}$ be a base-ring of closed sets of a T_0-space $(X,\underline{X})$.

<u>Theorem</u> Let $\overline{X} = \underline{P}(X,\underline{R})$ be the primefilter space consisting of all $\underline{R}$-primefilters with the hull-kernel topology. Then $\underline{P}(X,\underline{R})$ is determined uniquely (up to a X-isomorphism) by the following three properties:

I) $\overline{X}$ is T_0 and $\{ \overline{R} \mid R \in \underline{R} \}$ is base of closed sets.

II) If $R_1, R_2 \in \underline{R}$, then $\overline{R_1 \cap R_2} = \overline{R}_1 \cap \overline{R}_2$.

III) a) If $\hat{X}$ is a T_0-extension fulfilling I) and II), then there is a X-embedding of $\hat{X}$ in $\overline{X}$.

b) If $\hat{X}$ is a T_0-extension fulfilling I) and II) and if there is a X-embedding of $\overline{X}$ in $\hat{X}$, then this embedding is an isomorphism.

<u>Theorem</u> Let $\langle X_\alpha, \Pi^\alpha_\beta, A_{\underline{R}} \rangle$, $\alpha, \beta \in A_{\underline{R}}$ be the inverse system of finite T_0-spaces constructed by $\underline{R}$. Then the inverse limit $\lim \langle X_\alpha, \Pi^\alpha_\beta, A_{\underline{R}} \rangle$ is X-isomorphic to the primefilterspace $\underline{P}(X,\underline{R})$.

Further details (concerning Wallman's construction) and some applications will appear in 'Quaestiones Mathematicae' .

[1] J. Flachsmeyer: Zur Spektralentwicklung topologischer Räume, Math. Ann. 144, 253 - 274 (1961).

[2] J. Nagata: Modern General Topology, Amsterdam-London 1974 .