P. Holický, L. Zajíček, M. Zelený A remark on a theorem of Solecki

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Abstract: S. Solecki proved that if \mathcal{F} is a system of closed subsets of a complete separable metric space X, then each Suslin set $S \subset X$ which cannot be covered by countably many members of \mathcal{F} contains a \mathbf{G}_{δ} set which cannot be covered by countably many members of \mathcal{F} . We show that the assumption of separability of Xcannot be removed from this theorem. On the other hand it can be removed under an extra assumption that the σ -ideal generated by \mathcal{F} is locally determined. Using Solecki's arguments, our result can be used to reprove a Hurewicz type theorem due to Michalewski and Pol, and a nonseparable version of Feng's theorem due to Chaber and Pol.

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