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Countable spaces and connectifications

Which countable spaces have a connected compactification? Interest in this topic began with van Douwen's 1981 result that there is a Tychonoff nowhere locally compact space with no connected compactification. Also Emeryk and Kulpa verified van Douwen's conjecture that the Sorgenfrey line was such a space. Gruenhage et al. established that all metrizable nowhere locally compact spaces have a connected compactification while Alas et al. established a slightly stronger result in the separable case (which Gruenhage et al. showed did not hold in the general case). In this work we consider simple one-point extensions of the rationals and the main result is to show that there is one which does not have a connected compactification.

This is joint work with Vladimir Tkachuk.