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Machiel van Frankenhuijsen* (vanframa@uvsc.edu), Department of Mathematics, Orem, UT 84058. *Arithmetic progressions of zeros of the Riemann zeta function.*

We analyze the spectral problem for the so-called ‘truncated Cantor strings’. These strings have finitely many complex dimensions, located at $D + in\mathbf{p}$, $0 < |n| < N$. For $D = 1/2$, the inverse spectral problem can be solved if $N > 13\mathbf{p}$, and for $D > 1/2$, this problem can already be solved for $N > C(\log \mathbf{p})\mathbf{p}^{1/D-1}$. We thus obtain corresponding theorems about the maximal number of zeros of $\zeta(s)$ in the critical strip in vertical arithmetic progression. (Received February 07, 2006)