Projections of Mandelbrot percolation

Joint work with Michal Rams (Warsaw)

We are given a natural number $M \geq 2$ and a probability $p \in (0,1)$. First we partition the unit square $[0,1]^2$ into M^2 congruent squares and then we choose any of them with probability p and discard them with probability $1-p$ independently. In the squares which were retained we repeat this process independently ad infinitum. The random set $E \subset [0,1]^2$ resulted is the object of interest of the talk. It was proved by J. T. Chayes, L. Chayes, and R. Durrett, that there is a critical value p_c such that for $p < p_c$ the random set E is totally disconnected and for $p > p_c$, the set E percolates. That is E contains a connected set which has a nonempty intersection with both of the left and the right wall of the unit square. In this talk we study the orthogonal and radial projections of this random set E.