

## Meltem Unel

*Title: Height coupled trees*

We consider planar rooted random trees whose distribution is even for fixed height  $h$  and size  $N$  and whose height dependence is of exponential form  $e^{-\mu h}$ . Defining the total weight for such trees of fixed size to be  $Z^{(\mu)}_N$ , we determine its asymptotic behaviour for large  $N$ , for arbitrary real values of  $\mu$ . Based on this we evaluate the local limit of the corresponding probability measures and find a transition at  $\mu=0$  from a single spine phase to a multi-spine phase. Correspondingly, there is a transition in the volume growth rate of balls around the root as a function of radius from linear growth for  $\mu < 0$  to the familiar quadratic growth at  $\mu=0$  and to cubic growth for  $\mu > 0$ .