

**Title:** Conditional large and moderate deviations for sum of discrete random variables. Combinatoric applications

**Author:** Thierry Klein. Université Paul Sabatier. Toulouse

**abstract:** For  $n \in \mathbb{N}^*$ , let  $(X^{(n)}, Y^{(n)})$  be a random vector with  $X^{(n)} \in \mathbb{N}$ . Take  $(X_1^{(n)}, Y_1^{(n)}) \dots (X_n^{(n)}, Y_n^{(n)})$  be an independent identically distributed (i.i.d.) sample having the same distribution as  $(X^{(n)}, Y^{(n)})$ . Set, for  $n \in \mathbb{N}^*$  and  $q_n \in \mathbb{N}^*$ ,  $S_n = X_1^{(n)} + \dots + X_{nq_n}^{(n)}$  and  $T_n = Y_1^{(n)} + \dots + Y_{nq_n}^{(n)}$ . In this talk we will show how we can get large and moderate deviation for the distribution of  $T_n/nq_n$  conditioned by the event  $\{S_n = np_n\}$ .