Figure 14: Performance of different modulation levels with GBN ARQ and adaptive FEC for the “Harry Potter” HD sequence

Table 1 demonstrates the effect of $B_{th}$ on the performance of the adaptive QAM and fixed code rate system for the “Harry Potter” HD sequence. It can be noticed that increasing $B_{th}$ helps in reducing the playback buffer starvation instants which in turns improves the temporal quality of the reconstructed video. However, this causes increased frame truncation which degrades the spatial quality of the reconstructed video. In Table 1, the system with $B_{th}^{(I)}=B_{th}^{(P)}=B_{th}^{(B)}=16$ achieves the highest temporal playback quality but results in the highest frame truncation. On the other hand, the system with $B_{th}^{(I)}=B_{th}^{(P)}=B_{th}^{(B)}=0$ results in the lowest frame truncation but achieves the lowest temporal playback quality. Adaptive selection of $B_{th}$ based on the importance of video frames provides a better performance when compared with the fixed $B_{th}$ systems. As can be seen in Table 1, the proposed adaptive $B_{th}$ assignment ($B_{th}^{(I)}=4$, $B_{th}^{(P)}=8$, $B_{th}^{(B)}=16$) provides an equivalent performance in terms of temporal playback quality when compared with the highest fixed $B_{th}$ system ($B_{th}^{(I)}=B_{th}^{(P)}=B_{th}^{(B)}=16$). However, the adaptive $B_{th}$ system (where $B_{th}^{(I)}=4$, $B_{th}^{(P)}=8$, $B_{th}^{(B)}=16$) incurs much less truncation of important frames (I and P frames) which is reflected into a better spatial quality of the played back video when compared with other systems with fixed $B_{th}$ or even with the case $B_{th} = 0$. 