Dear Michelle,

Here are some notes in preparation for our discussion. The main steps of the argument are as follows.

1° At the receiver, the condition necessary and sufficient for asymptotic feasibility is that

\[ H(X_i | F) \geq c_i \]

demand for demand of practical utility

\[ i \text{ set of } X_i \text{ s.t. } i \neq i \]

2° It is sufficient, to establish the sufficiency of linearity in the interior of the network, to establish the following:

\[ H(X_i | \{X_i^m \}_{i=8}) \quad \forall \ i \in \{0, 1, 2, \ldots, 10\} \]

or asymptotically feasible with a linear code off.
\[ H\left( X_{ik} \mid X_{im}, X_{im'} \right) \leq \sum_{\text{all permutations}} H\left( X_{im} \mid X_{im}, X_{im'}, X_{im''} \right) \]

where \( H_{ik} \cdot j \) is the set of nodes that are heads of nodes in \( S_{ik} \) (where \( S_{ik} \) is the set of edges from \( i \) to \( k \)) and where \( S_{im', ik} \) is the set of edges with head \( i_m \) and tail \( i_k \).

(This is a generalization of Huygeni - Alder.)

Best,

Michael