Suppose that ϵ has a Beta distribution with mean zero:

$$f(\epsilon) \equiv \epsilon^{\alpha-1}(1-\epsilon)^{\beta-1}. \tag{1}$$

with support on $[-\bar{\epsilon}, \bar{\epsilon}]$, for some $\bar{\epsilon} > 0$. The sender's and receiver's problems are just as before:

$$\min_{m} \int_{-\bar{\epsilon}}^{1+\bar{\epsilon}} \int_{q_-(\tilde{m})}^{q_+(\tilde{m})} (q - A(\tilde{m}))^2 f_\alpha(\tilde{m} - m(q)) dq d\tilde{m} \tag{2}$$

We approximate m with a step function.

$$m(q) = \sum_{k=0}^{N-1} \frac{k}{N} \cdot \mathbf{1}_{q_k \leq q < q_{k+1}} \tag{3}$$

Therefore, the sender's problem is to choose a partition $0 = q_0 < q_1 < \ldots < q_N = 1$ of $[0, 1]$:

$$\max_{\{q_1, \ldots, q_{N-1}\}} \sum \tag{4}$$