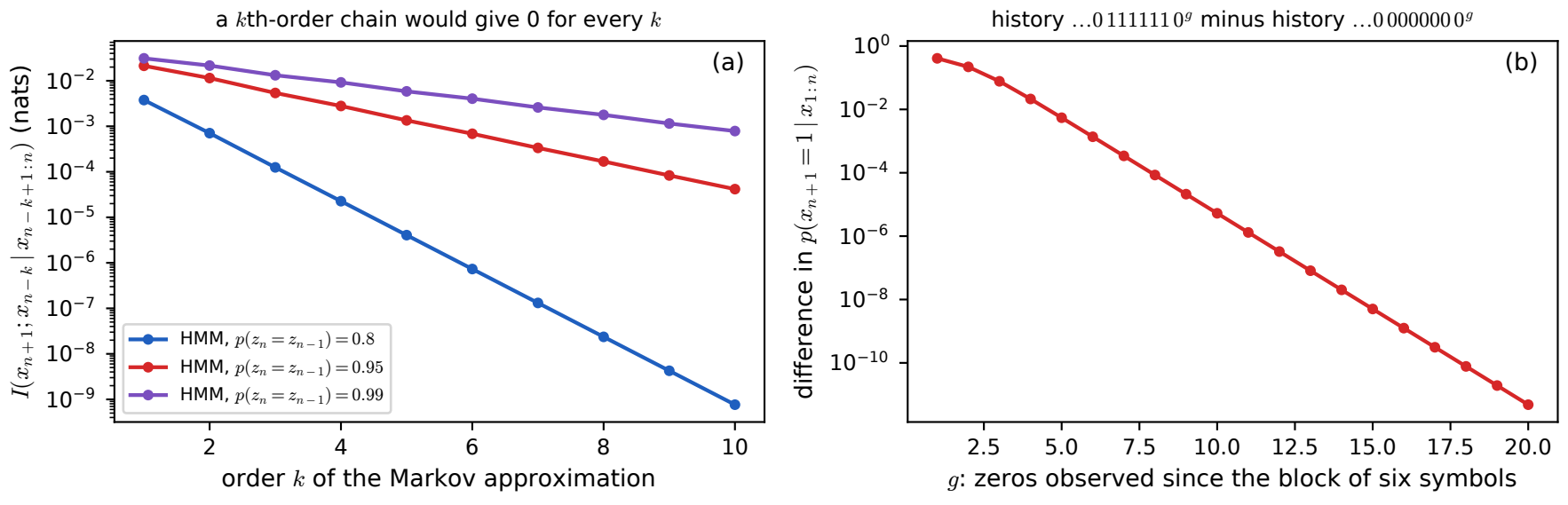

a kth-order chain would give 0 for every k
(a)
$I(x_{n+1}; x_{n-k} \mid x_{n-k+1:n})$ (nats)
HMM, $p(z_n = z_{n-1}) = 0.8$
HMM, $p(z_n = z_{n-1}) = 0.95$
HMM, $p(z_n = z_{n-1}) = 0.99$
order k of the Markov approximation
history $\ldots 0\,1111110^g$ minus history $\ldots 0\,0000000^g$
(b)
difference in $p(x_{n+1} = 1 \mid x_{1:n})$
g: zeros observed since the block of six symbols