



Optimal Signature Design for Spread-Spectrum Steganography



Dimitris A. Pados, State University of New York at Buffalo
Stella N. Batalama and Michael J. Medley, AFRL, Rome, NY

Objective

Redefine state of the art of transform-domain spread-spectrum steganographic technology via signature design optimization

Technical Innovations

- Host adaptive signature design that guarantees
 - minimum MS host distortion
 - maximum embedding capacity (for Gaussian transform-domain host)
 - maximum SINR message recovery
 - minimum BER message recovery (for Gaussian transform-domain host)
- Host-adaptive jointly optimal signature design and embedding in linearly processed host data
- Host-adaptive optimal multi-user (multi-message) embedding

Illustration

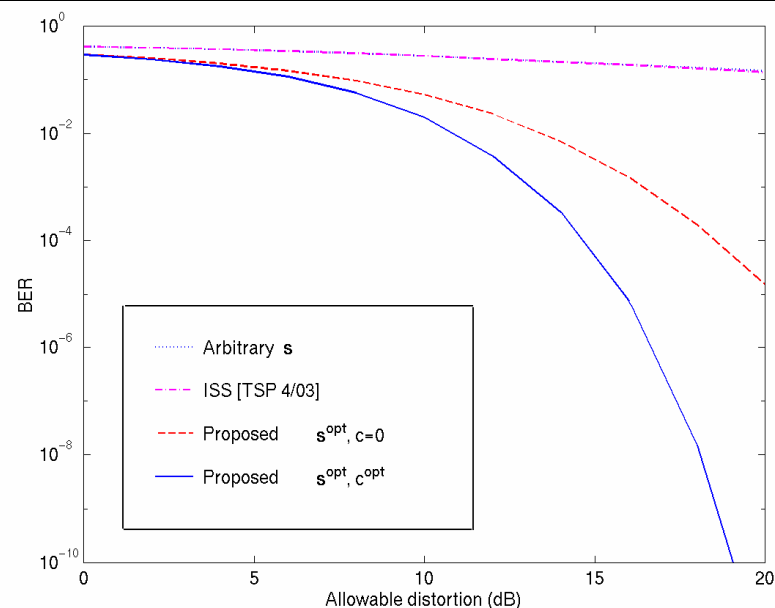


(a)



(b)

(a) Original 512x512 host image. (b) Host with 4Kbit hidden message and white Gaussian noise (proposed \mathbf{s}^{opt} & \mathbf{c}^{opt} embedding in 8x8 block-DCT linearly processed data, sig. length 63, distortion 20dB, noise variance 3dB).



BER versus distortion studies for the F-16 host image.