

Invited talk speaker: Prof. Moon Ho Lee, Chonbuk National University. Korea.

Homepage: <http://mdmc.chonbuk.ac.kr>, <http://wcu.chonbuk.ac.kr>

Title: Jacket Matrix and Coding Theory

Let a square matrix $[J]_{m \times m} = [J_{ij}]_{m \times m}$. If its inverse matrix is obtained simply by an element-wise inverse, i.e., like $[J]_{m \times m}^{-1} = \frac{1}{C} \left[\frac{1}{J_{ij}} \right]_{m \times m}^T$, for $1 \leq i, j \leq m$, where C is a nonzero constant, then we call matrix $[J]_{N \times N}$ a **Jacket matrix**, such as

$$[J]_m = \begin{bmatrix} j_{0,0} & j_{0,1} & \cdots & j_{0,m-1} \\ j_{1,0} & j_{1,1} & \cdots & j_{1,m-1} \\ \vdots & \vdots & \ddots & \vdots \\ j_{m-1,0} & j_{m-1,1} & \cdots & j_{m-1,m-1} \end{bmatrix}, \quad \text{and its inverse is } [J]_m^{-1} = \begin{bmatrix} 1/j_{0,0} & 1/j_{0,1} & \cdots & 1/j_{0,m-1} \\ 1/j_{1,0} & 1/j_{1,1} & \cdots & 1/j_{1,m-1} \\ \vdots & \vdots & \ddots & \vdots \\ 1/j_{m-1,0} & 1/j_{m-1,1} & \cdots & 1/j_{m-1,m-1} \end{bmatrix}^T,$$

where C is the normalized value for this matrix, and T is the transpose. Jacket matrix is very useful in mobile signal processing, sequence design, quantum code design and many other applications.

Talking about as shown:

1. Wireless Network for Cloud Computing based on Jacket Matrices.
2. Fourier: DCT/DFT/Wavelet.
3. MIMO Singular Value Decomposition channel.
4. PN sequence.
5. Eigenvalue Decomposition of Jacket Matrices.
6. Jeongnang NOR Channel Coding.

Available Online: http://en.wikipedia.org/wiki/Jacket_matrix

<http://en.wikipedia.org/wiki/Category:Matrices>

<http://en.wikipedia.org/wiki/User:Leejacket>