Journal Watch
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- Wireless Compressive Sensing for Energy Harvesting Sensor Nodes
  Authors: Gang Yang, Vincent Y.F. Tan, Chin Keong Ho, See Ho Ting and Yong Lian Guan

- Introduces the notion of *Wireless Compressive Sensing*
  - EH-WSN with fusion center considered.
  - L spatially located sensor nodes with each node j measuring datum x_j.
  - The vector $\mathbf{x} = (x_1, x_2 \ldots x_L)$ has a k-sparse representation with respect to some dictionary.
  - Each sensor node is an EHS, transmits with probability p_j.
  - All sensor nodes transmit there data symbols simultaneously in M slots.
  - Rayleigh fading with channel coefficients independent across slots and nodes.

- Different receive SNRs considered at fusion center. (*Inhomogeneity of SNRs*)

- Main results:
  - FC can recover data accurately if, no. of transmissions exceeds $O(\frac{k\rho_{max}k}{p_{min}^2\rho_{min}(k)} \log \frac{L}{k})$
  - By using theory of large deviations, it is shown that both $\rho_{max}(k)$ and $\rho_{min}(k)$ concentrate around one for large n and k growing at a rate slower than $\sqrt{(n)}$.

- Expectation Maximization Gaussian-Mixture Approximate Message Passing
  Authors:Jeremy P. Vila and Philip Schniter

- Standard sparse signal recovery problem:

$$\mathbf{y} = \mathbf{A}\mathbf{x} + \mathbf{w}$$

  where non zero entries of **x** come from an underlying distribution $p_X(.)$.

$$p_X(x_i) = \lambda f_X(x_i) + (1-\lambda)\delta(x_i)$$

- Proposes EM-GM-AMP algorithm as summarized below:
  - Assume $f_X(.)$ to be an L term Gaussian mixture i.e., $f_X(x_i) = \sum_{l=1}^{L} w_l N(x_i; \theta_j, \Phi_l)$
  - GM-AMP algorithm used to compute posterior distribution $p(\mathbf{x}/\mathbf{y}, w_{1:L}, \theta_{1:L}, \Phi_{1:L})$.
  - Learn (w_l, θ_l, Φ_l) using EM algorithm.

- Since GM-AMP can handle arbitrary $p_{Y/X}(.)$, we can also consider additve non-Gaussian noise in measurement model.

- Selection of GM model order L is also discussed.

Thank You !!!