

# CNeuro2025

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## Reading Material

### Review Papers:

1. Haefner, R. M., Beck, J., Savin, C., Salmasi, M., & Pitkow, X. (2024). *How does the brain compute with probabilities?* arXiv preprint [arXiv:2402.00000].
2. Pouget, A., Beck, J. M., Ma, W. J., & Latham, P. E. (2013). Probabilistic brains: knowns and unknowns. *Nature Neuroscience*, 16(9), 1170–1178. <https://doi.org/10.1038/nn.3495>
3. Griffiths, T. L., Chater, N., Kemp, C., Perfors, A., & Tenenbaum, J. B. (2010). Probabilistic models of cognition: Exploring representations and inductive biases. *Trends in Cognitive Sciences*, 14(8), 357–364. <https://doi.org/10.1016/j.tics.2010.05.004>
4. Lange, R. D., Shivkumar, S., Chatteraj, A., & Haefner, R. M. (2023). Bayesian encoding and decoding as distinct perspectives on neural coding. *Nature Neuroscience*, 26, 2063–2072. <https://doi.org/10.1038/s41593-023-01499-0>

### Research Papers:

5. Zemel, R. S., Dayan, P., & Pouget, A. (1998). *Probabilistic interpretation of population codes*. *Neural Computation*, 10(2), 403–430. <https://doi.org/10.1162/089976698300017818>
6. Ma, W. J., Beck, J. M., Latham, P. E., & Pouget, A. (2006). *Bayesian inference with probabilistic population codes*. *Nature Neuroscience*, 9(11), 1432–1438. <https://doi.org/10.1038/nn1790>
7. Yang, T., & Shadlen, M. N. (2007). *Probabilistic reasoning by neurons*. *Nature*, 447(7148), 1075–1080. <https://doi.org/10.1038/nature05852>
8. Beck, J. M., Ma, W. J., Pitkow, X., Latham, P. E., & Pouget, A. (2008). *Probabilistic population codes for Bayesian decision making*. *Neuron*, 60(6), 1142–1152. <https://doi.org/10.1016/j.neuron.2008.09.021>
9. Fiser, J., Berkes, P., Orbán, G., & Lengyel, M. (2010). *Statistically optimal perception and learning: From behavior to neural representations*. *Trends in Cognitive Sciences*, 14(3), 119–130. <https://doi.org/10.1016/j.tics.2010.01.003>
10. Fetsch, C. R., Pouget, A., DeAngelis, G. C., & Angelaki, D. E. (2012). *Neural correlates of reliability-based cue weighting during multisensory integration*.

*Nature Neuroscience*, 15(1), 146–154. <https://doi.org/10.1038/nn.2983>

11. Haefner, R. M., Berkes, P., & Fiser, J. (2016). *Perceptual decision-making as probabilistic inference by neural sampling*. *Neuron*, 90(3), 649–660. <https://doi.org/10.1016/j.neuron.2016.03.020>
12. Orbán, G., Berkes, P., Fiser, J., & Lengyel, M. (2016). *Neural variability and sampling-based probabilistic representations in the visual cortex*. *Neuron*, 92(2), 530–543. <https://doi.org/10.1016/j.neuron.2016.09.038>
13. Schwöbel, S., Kiebel, S., & Marković, D. (2018). *Active inference, belief propagation, and the Bethe approximation*. *Neural Computation*, 30(10), 2530–2567. [https://doi.org/10.1162/neco\\_a\\_01116](https://doi.org/10.1162/neco_a_01116)

## Books

1. Doya, K. (Ed.). (2007). *Bayesian Brain: Probabilistic Approaches to Neural Coding*. MIT Press.
2. Koller, D., & Friedman, N. (2009). *Probabilistic Graphical Models: Principles and Techniques*. MIT Press.
3. Ma, W. J., Körding, K. P., & Goldreich, D. (Eds.). (2022). *Bayesian Models of Perception and Action: An Introduction*. MIT Press.