

Phase Transition Project Progress Report  
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# 1 Summary

During the past three weeks, Raj and I were mostly busy writing the code for simulating density evolution for LDPC codes over BSC channels. So far, we have completed the code for regular and irregular LDPC codes.<sup>1</sup>

In recent days, we have focused on simulating the Montanari's bound [1] using the density evolution code that we have developed. Thanks to Raj, the code for simulating Montanari's bound is working fine for the BEC channel and we are working to make it work for the BSC channel as well.

At the moment, we are developing the code for the LDGM channel and working on the Montanari's bound for BSC. When the codes are ready, we will be able to compare Montanari's bound with ours and carry on with publishing the phase transition paper in a journal.

## References

- [1] A. Montanari, "Tight bounds for LDPC and LDGM codes under MAP decoding", IEEE Trans. Inf. Theory, Vol. 51, No. 9, 2005, pp. 3221-3246.

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<sup>1</sup>The code can be written in MATLAB and is available in the codes database.