Noisy Signals PreLab
Rochester Institute of Technology

PHYS-316 Advanced Lab*

January 22, 2022

Refer to the Lab Manual for necessary equations when answering the following questions.

1. Given parameters $R = 100$ kΩ and $\Delta f = 100$ kHz, what is the RMS voltage Johnson noise of the resistor at room temperature ($T = 295$ K)?
2. Could you measure this V_{rms} on a multimeter? Use the Amprobe multimeter specifications sheet (on myCourses) to answer.
3. Keeping all else constant, what temperature T would produce 1.5-V fluctuations?
4. Assuming T and Δf are constant, how might you measure k_B?

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