Abstract Submitted
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**Active membrane fluctuations with proton pumps** ADAM SZMELTER, KEJIA CHEN, STEVE GRANICK, Univ of Illinois - Urbana — We investigate nonequilibrium membrane fluctuations in giant unilamellar vesicles (GUVs) by reconstituting the light-activated proton pump, bacteriorhodopsin (BR). Once activated, BR is known to form oligomers in model membranes, with an unknown effect on fluctuation amplitude. By using the UV-crosslinkable lipid, 1,2-bis(10,12-tricosadiynoyl)-sn-glycero-3-phosphocholine, we localize BR and prevent light-induced oligomerization. This system allows us to selectively switch on and off active fluctuations and to turn off diffusion (oligomerization) using green and UV light, respectively. We compare active membrane fluctuations with trapped and freely diffusing BR using an interferometric technique with sub nanometer and microsecond resolution. Remarkable dependence is found on whether BR is localized or freely diffusing.

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