

Assignment 7  
Physics of Music - 2016  
Physics 341

1. What would you expect to happen to the sound of a violin if you made the bridge much heavier? (This is done by clipping a “mute” to the bridge of the violin.) Recall two features– how well would a heavier bridge do in transmitting the vibrations, and what would happen to the primary bridge resonance of one did this?

2. What would happen to the playing of a violin if one put soap instead of rosin on the bow?

3. At times in an auditorium, the speakers “howl” or whistle due to “feedback” especially if the microphone is in front of the speaker(s)? What do you think is happening? what would be the important features which would determine the frequency at which the speakers howled?

4. The London Millenium Footbridge was opened in 2000 and closed a day later due to severe instability. The bridge had a mode of side to side oscillation with a period of about 1.2 sec. What would your reaction be if the bridge suddenly moved to the side, and how long would you estimate it take you. Predict the behaviour of the bridge with a large number of people on it.(Think about the bridge moving to one side, the reaction of the people to that, and the motion of the bridge by the time your reaction was finished, and your subsequent reaction.)

(This sort of delayed feedback is a very common source of instability.)

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