Ecole Polytechnique **Printemps 2019**

Modal de Géophysique

The double bucket method to create a stratification

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We wish to create a linear vertical stratification:

$$N^2 = -\frac{g}{\rho_0}\frac{\partial \rho}{\partial z} = cte\,. \tag{1.1}$$

1. Make sure the valves A and B are closed
2. Fill up two tanks: one with fresh water and one with salty water. The water level in the to tanks should be identical.
3. Start the stirrer in the fresh water tank so that it is remains well mixed.
4. Open the valve A to its maximum.
5. You are going to fill up your tank for your experiment from the bottom. Adjust and attach the fresh water discharge tube such that it will always remain at the bottom of your tank (in the middle if possible).
6. Slowly open valve B to minimize the turbulence at the outlet of the tube.
7. You can control the value of N^2 by adjusting the volume of water in the fresh and salt water tank and the salt concentration.

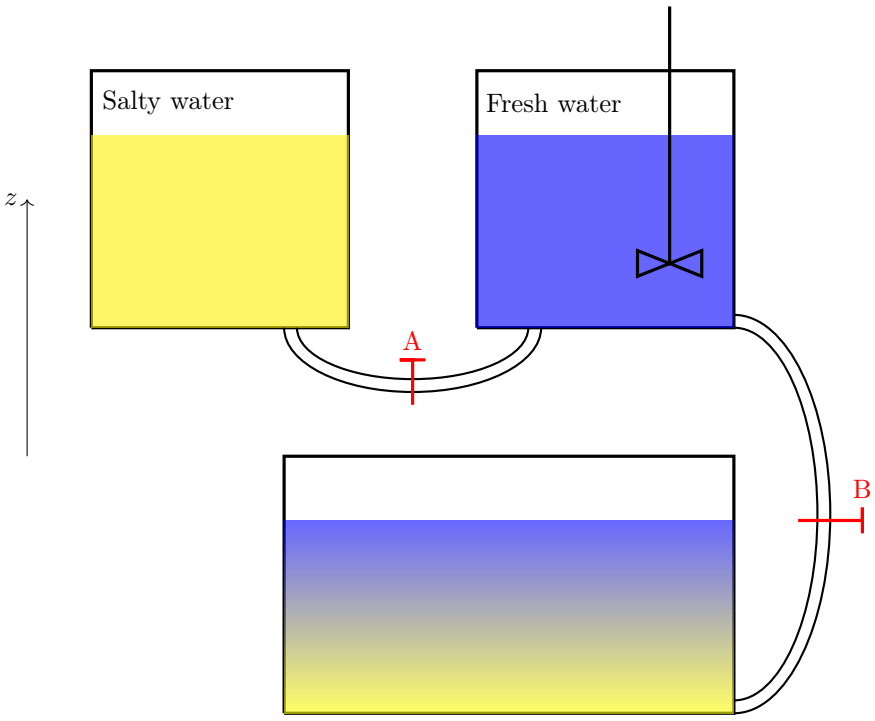

Figure 1.1: Illustration of the double bucket method