Sound Flow: Artist's Statement

My project is a 2D projection on a wall of a system of particles which dance according to the pitch and volume of the music or sound being recorded on a microphone. Higher frequencies of sound will enlarge the size of the particles and make them move at a higher speed in order to depicts the higher amount of energy of the music while lower frequencies will reduce the size of the particles and will slower down their speed. Each particle will have a different gradient of colors depending on the low to high frequencies perceived in the music or sound. The projection will also represent the repartition of sound in the room. There will be a greater accumulation of particles in sections of the room in which the volume is louder.

The goal of this project is to show a visual representation of sound and how it is spread in the environment. Since sound is often a concept we look over or don't pay enough attention to, I believe that a visual feedback will further enhance the experience of sound. Since the final product will be a projection on the wall, the experience will feel more immersive and representative of reality. The background behind the particles will be transparent so that the particles feel more integrated to the environment and feel less like a simple projection. The overall idea to be able to combine visual and auditory sense together and view an augmented version of sound.

Questions:

How could I create a large amount of particles or different types of particles?

How could I make the particles move towards the direction with a higher volume if the volume is constantly changing at a rapid rate?

How do I make the experience more interactive for the user?