The interference pattern on the surface of water in the case of two synchronous point sources can be described by a mathematical formula called the interference pattern equation.

Assuming that the sources are located a distance 'd' apart, and that they emit waves of wavelength 'λ', the interference pattern equation can be written as:

I = 4I₀ cos² (πd sinθ / λ)

Where I is the intensity of the interference pattern at a given point on the surface of the water, I₀ is the intensity of each individual source, θ is the angle between the line connecting the two sources and the line connecting the observer to the point of interest, and cos² is the cosine squared function.

This equation describes a pattern of alternating bright and dark bands on the water's surface, known as interference fringes. The bright bands correspond to points where the waves from the two sources reinforce each other, while the dark bands correspond to points where the waves cancel each other out.

The interference pattern equation can be represented as a matrix, with the intensity values of the interference pattern at different points on the water's surface being the elements of the matrix. However, the specific form of this matrix will depend on the geometry of the setup, such as the distance between the sources, the wavelength of the waves, and the angle of observation.

The equation for the interference pattern due to two synchronous sources of frequency f at a distance d from each other in a medium with wave speed v can be written as:

I(x,t) = 4I₀cos²(πd sinθ/λ)cos[2πf(t - x/v)]

where I₀ is the intensity of each source individually, λ is the wavelength of the wave, and θ is the angle between the line connecting the sources and the point on the interference pattern where the intensity is being measured.

The time-dependent component of this equation is the cosine term in the brackets, which represents the oscillation of the interference pattern as a function of time. This term has a frequency of 2πf and is modulated by the spatial interference pattern described by the cosine squared term.

Note that the interference pattern will shift in space as a function of time due to the term (t - x/v), which represents the time it takes for the wave to propagate from the sources to the point where the intensity is being measured. This means that the interference pattern will move in space with a velocity of v.