In this talk, we present an overview of our recent findings on bound states in the continuum (BICs) for both acoustic and

elastic waves. We demonstrate that circular clusters of scatterers can be designed to trap elastic waves, effectively canceling

radiation losses and forming BICs. Extending this concept, we show that acoustic waves can also be trapped on a rigid surface,

but this phenomenon requires the presence of a covering rigid surface. We further illustrate that by periodically repeating the unit

cell atop the rigid surface, it is possible to achieve wave trapping without the necessity of forming a waveguide. Additionally, we

discuss the potential application of these structures for Rayleigh waves and provide insights into their experimental

characterization. This talk highlights the innovative strategies and practical implementations of BICs, showing their significant

impact on the manipulation and control of wave propagation.