Experimental (astro)physics has made tremendous progress in the past decade, putting us on the edge of the sensibility of theoretical modern physics. We are now staring into the abyss: the particle desert that lies beyond the electroweak scale, and the quantum geometry that lies beyond black hole horizons. I will talk about how the exciting dawn of gravitational wave astronomy enables us to explore the ”Edge of the Abyss”, by probing the quantum horizons via black hole echoes, and by peeking into the particle desert through the LIGO ”mystery noise.”