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The Sounds of Space

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The popular concept of space is that it is a vacuum, with nothing of interest between the stars, planets, moons and other astronomical objects. In fact most of space is permeated by plasma, sometimes quite dense, as in the solar corona and planetary ionospheres, and sometimes quite tenuous, as is in planetary radiation belts. Even less well known is that these space plasmas support and produce an astonishing large variety of waves, the “sounds of space.” In this talk I will give you a tour of these space sounds, starting with the very early discovery of “whistlers” nearly a century ago, and proceeding through my nearly fifty years of research on space plasma waves using spacecraft-borne instrumentation. In addition to being of scientific interest, some of these sounds can even be described as “musical,” and have served as the basis for various musical compositions, including a production called “Sun Rings,” written by the well-known composer Terry Riley, that has been performed by the Kronos Quartet to audiences all around the world.