Motivations to Search for Pulsars

1. Test for theory of gravity
   Binary pulsars systems are good laboratories for general relativity. General relativity predicts the existence of gravitational wave which carries the orbital energy of the binary system. Pulsar timing gives accurate period time which is an advantage to measure the change of the orbit precisely. Theoreticians can further modify the theory of gravity and test with pulsar binaries.
2. Cosmological gravitational wave
   The Big Bang event should have left some gravitational wave that travel through space, this is another powerful tool to understand what has happen during the early Universe. The cosmological gravitational wave would influence the pulse arrival timing, which is similar to LIGO. This effect is rather tiny, millisecond pulsar is the key to such a detection. Millisecond pulsars are extremely precise cosmological light houses, they may be the finest clocks in the Universe.
3. EXOPlanets
   Exo planets becomes a very popular topic in the astronomical society, astronomers discover many buzzard planets that completely differ from the planets in our solar system. The residuals in the pulsar timing are the clues to the planets that orbiting the pulsar, it is fascinating that this method can help to detect earth-like EXO planets, whereas it is difficult for optical spectroscopy.