

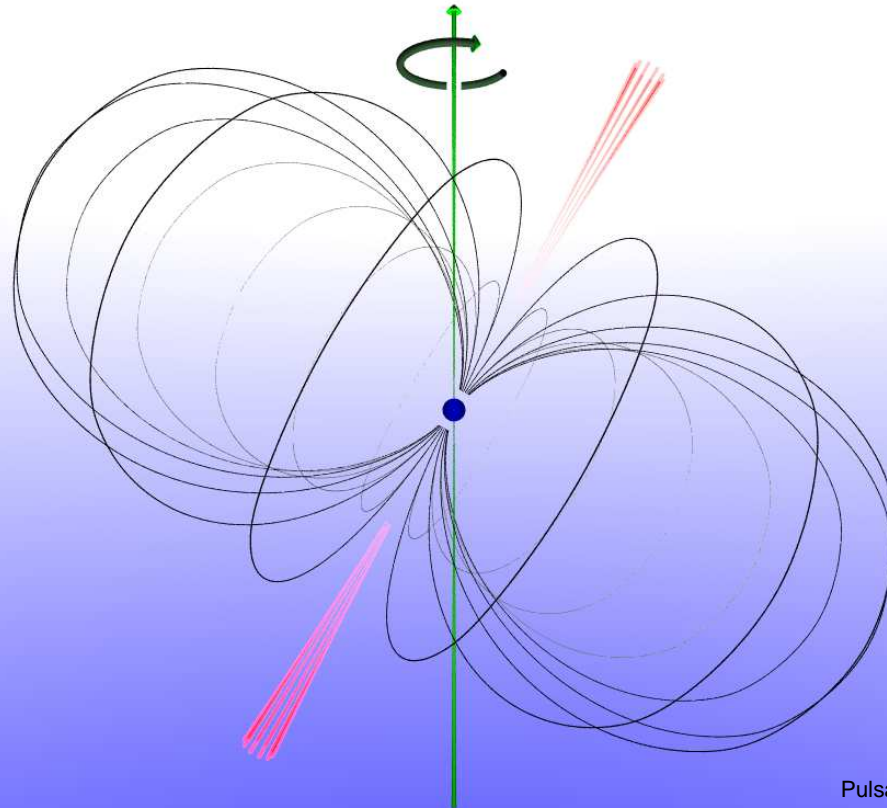


Pulsar science with the SKA

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Pulsars are...

- ⑥ Neutron stars with a diameter of 20 kilometres
- ⑥ Highly magnetized
- ⑥ Like lighthouses (emit in a rotating beam)



Previous results

- ⑥ Simulation of SKA pulsar surveys: 15 000 pulsars.
- ⑥ Calculations of computational requirements: limited to 1-km core.
- ⑥ Simulation of initial timing of pulsars (weeding).
- ⑥ Simulation of high-precision timing of (binary) pulsars.

Moving on to...

“Strong field tests of gravity using pulsars and black holes.”

- ⑥ Simulate pulsars in compact binaries.
- ⑥ Simulate acceleration survey.

How?

- ⑥ First get statistics on:
 - △ Number of binaries
 - △ Binary period
 - △ Semi-major axis
 - △ Eccentricity
 - △ Masses

Using SeBa.

- ⑥ Generate pulsars and place in random binary.
- ⑥ Make timeseries.
- ⑥ Apply acceleration search using Hydra.

Results

Are in progress. Include:

- ⑥ Proper strategy for finding compact binaries.
- ⑥ Number of compact binaries SKA will detect.
- ⑥ What are their characteristics?
- ⑥ How good are they for strong field tests of gravity?

1 Result: Period distribution

