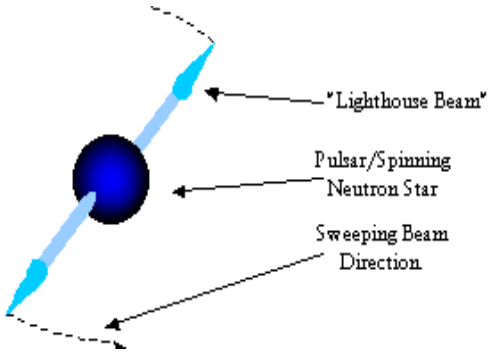
PULSARS

PULSARS GAMMABURSTER



LIGHTHOUSE MODEL HAS LIMITATIONS

EASTLUND 1968 MAGNETOSPHERE MODEL AGREES WITH DATA IN MORE WAYS THAN THE LIGHTHOUSE MODEL

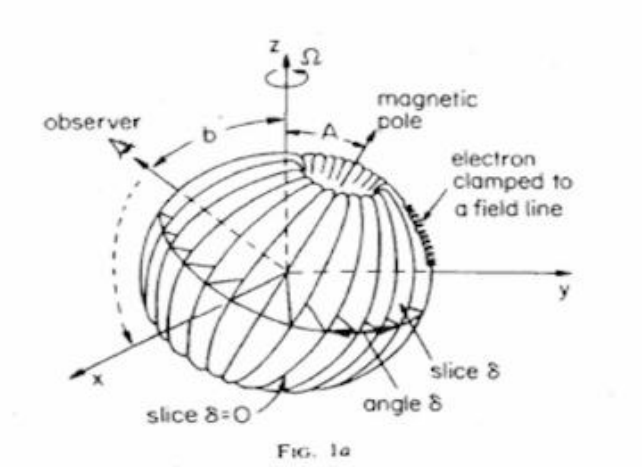


FIG. 1a

SCHEMATIC DRAWING OF MAGNETOSPHERE MODEL

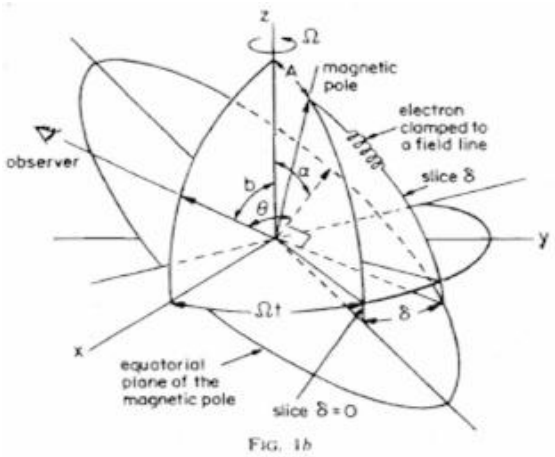
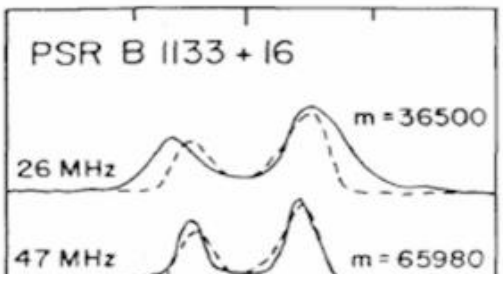


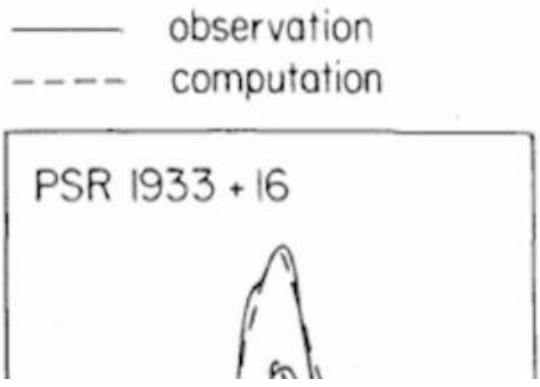
FIG. 1b

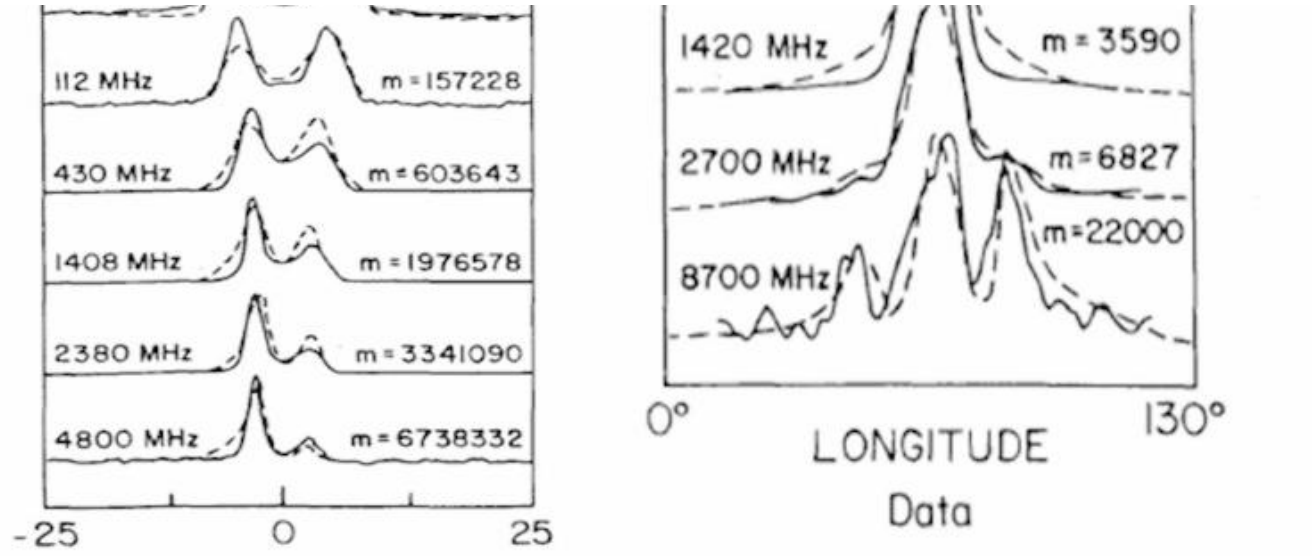
DEFINITION OF TERMS

RADIO PULSAR COMPARISONS-1996 PAPER

B. Eastlund and B. Miller teamed up again and published a paper in the Astrophysical Journal. "Radio Pulsar Emission from Closed and Filled Magnetospheric Shells", Astrophysical Journal, v. 464, 359-363,June 10, 1996. The power of the model comes from using one set of equations and varying only the frequency to determine pulse shapes. Comparisons with two different radio pulsars are shown below. The model's comparison with PSR B1133+16 captures even the change in the ratio of peak amplitudes versus frequency. The model easily gives three peaked pulses as shown in PSR 1933 +16 below.

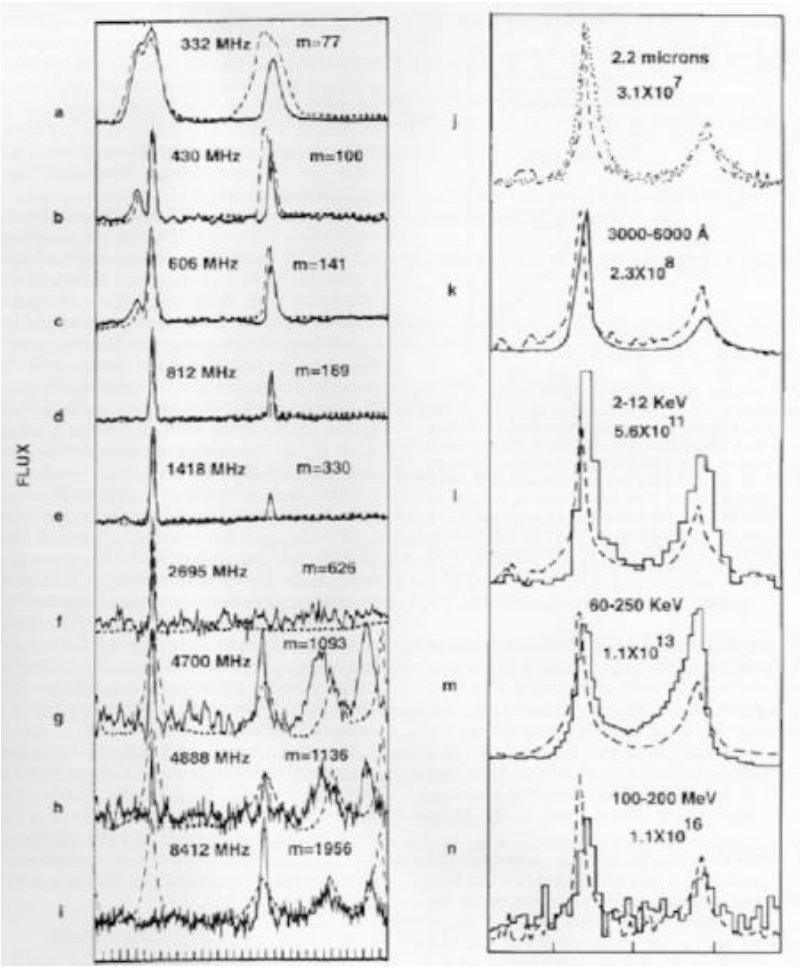






GAMMA PULSAR COMPARISONS-1997 PAPER

In 1997, Eastlund, Miller and Michel collaborated to write a paper, "Emission from Closed and Filled Magnetospheric Shells and its Application to the Crab Pulsar", Astrophysical Journal, v. 483, 857-867, July 10, 1997. The theory was able to duplicate the shape and amplitude of the pulses from 332 MHz to 200 MEV. This is a span of almost 15 orders of magnitude in frequency. The theory furthermore produces fine structure at 332 MHz. Note that the paper was in draft form, with the fine structure predicted, before new data discovering the fine structure at 332 MHz was available from the large array at Socorro, NM. The comparison of pulse shapes with frequency (synchrotron mode number, m) is shown below.



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