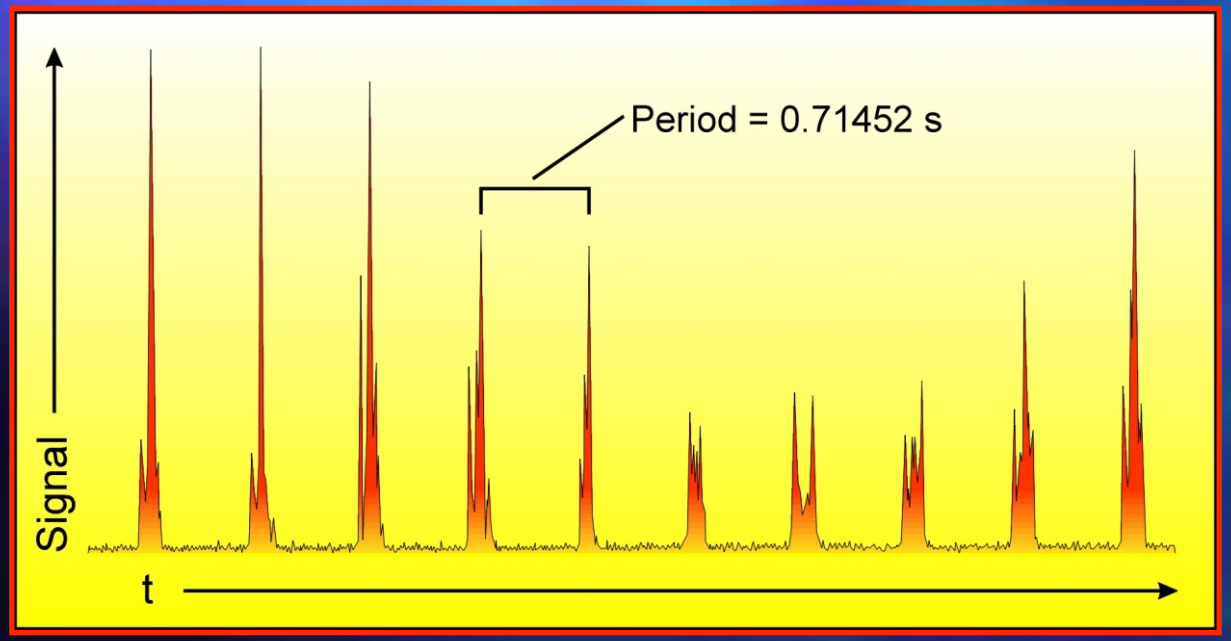
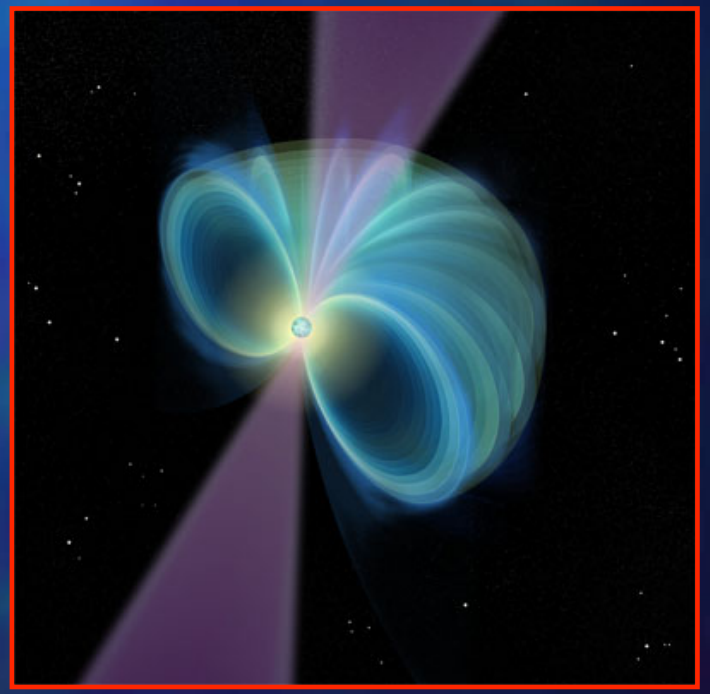
The Tzioumis Conferences at Kerastari.

The Labyrinth of the Unexpected: Unforeseen treasures in impossible regions of phase space

Early Pulsar searches

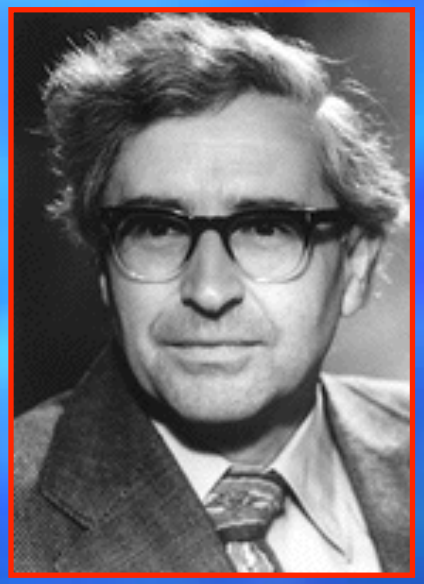
John H. Seiradakis
Laboratory of Astronomy, Department of Physics
Aristotle University of Thessaloniki



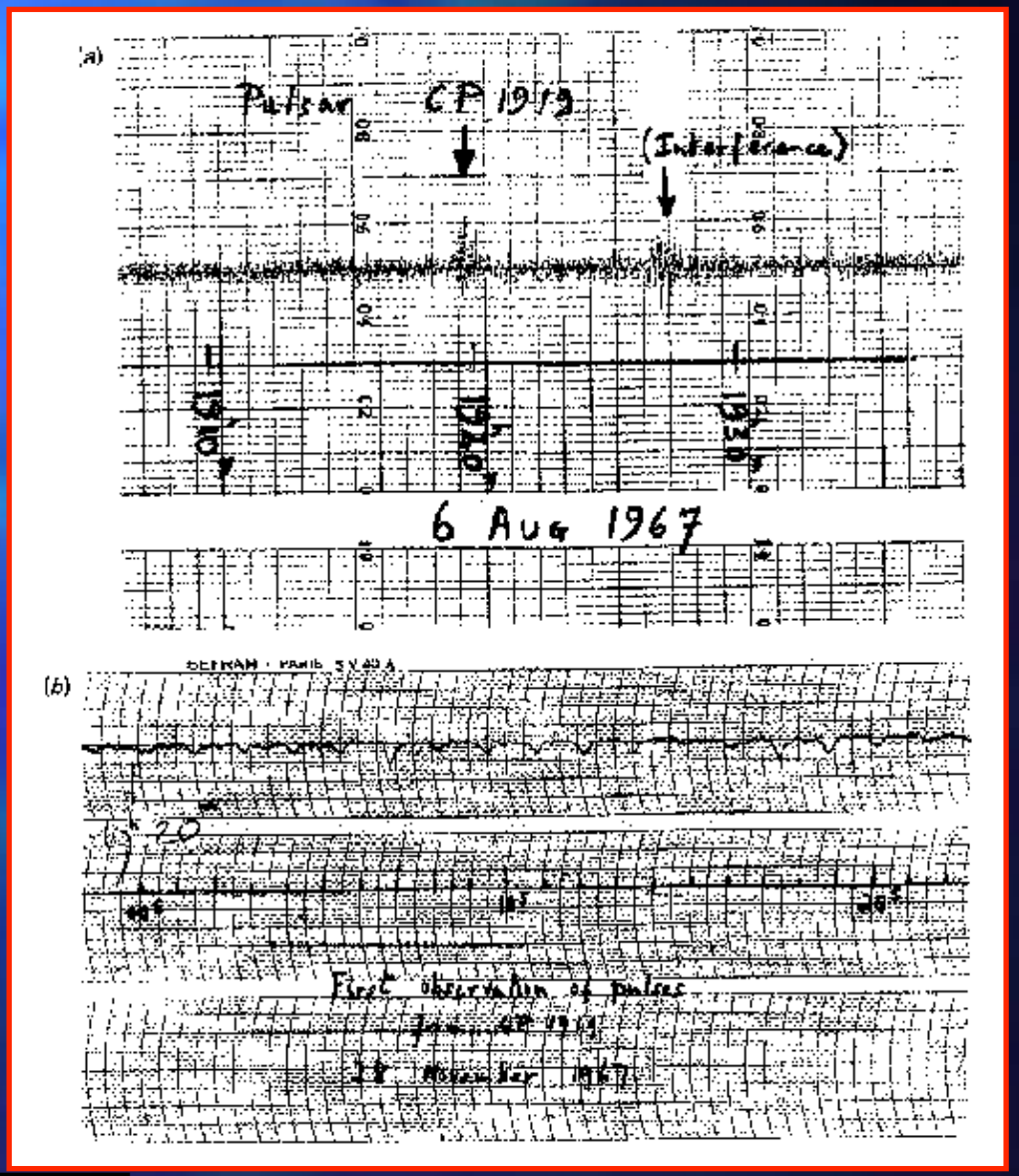


The detection of Pulsars in 1977
Jocelyn Bell-Burnell – Antony Hewish

Jocelyn Bell



Antony Hewish



More than 2500 pulsars have been detected since 1967, when Jocelyn Bell discovered PSR 1919+21 (CP 1919)

Pulsar Search Techniques

Periodicity Searches:

- Fourier transforms
- Fast Folding Algorithms

De-dispersion Searches:

Single Pulse Searches:

1968 – 1973: Pulsar Searches in Australia

Molonglo Cross searches (32 new pulsras)

(1968) Large, Vaughan and Wielebinski: 7 new pulsars

(1969) Large, Vaughan and Wielebinski: 4 new pulsars

(1968) Large, Vaughan and Mills: Discovery of **PSR 0833-45** (SNR)

(1969) Wielebinski, Vaughan and Large: Further new pulsars

(1969) Vaughan, Large and Wielebinski: 3 new pulsars

(1969) Large, Vaughan and Wielebinski: **High DM pulsars**

(1970) Vaughan and Large: 5 new pulsars

(1971) Large and Vaughan: 2 new pulsars

1968 – 1973: Pulsars discovered

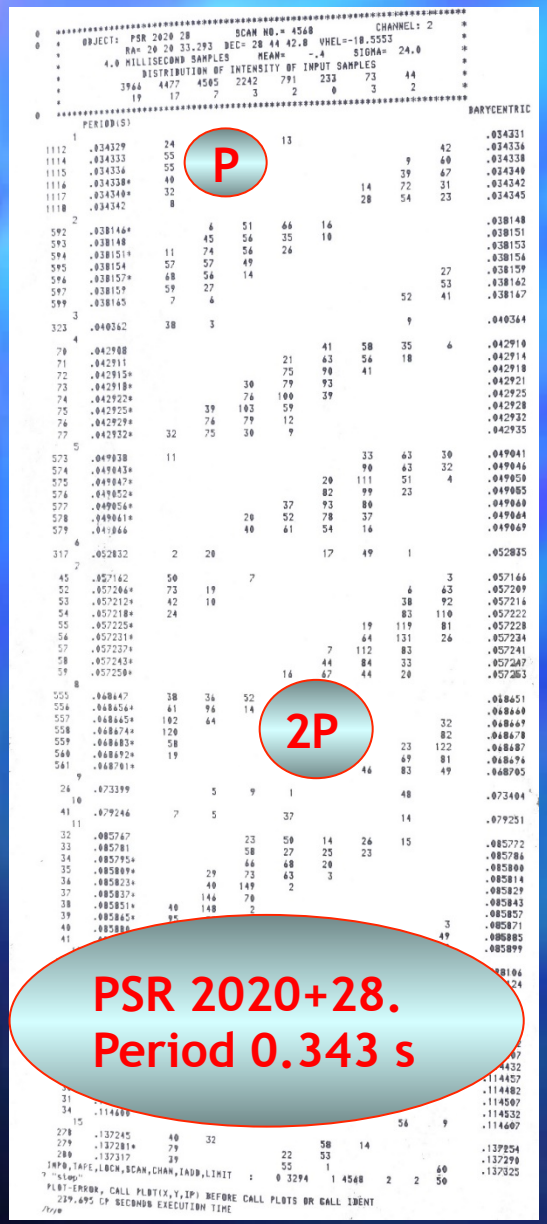
Observatory	Pulsars	Technique
Jodrell Bank (U.K.)	40	Dispersion and periodicity technique
Molonglo (Australia)	32	Paper charts, de-dispersion
Arecibo (Puerto Rico)	16	Periodicity searches, dedispersion
Parkes (Australia)	8	Periodicity searches
Cambridge (U.K.)	6	Paper charts
NRAO (U.S.A.)	6	Dispersion and periodicity technique
Bologna (Italy)	5	Paper charts
Ootacamund (India)	3	Paper charts?
Puschino (U.S.S.R.)	1	Paper charts

117 pulsars

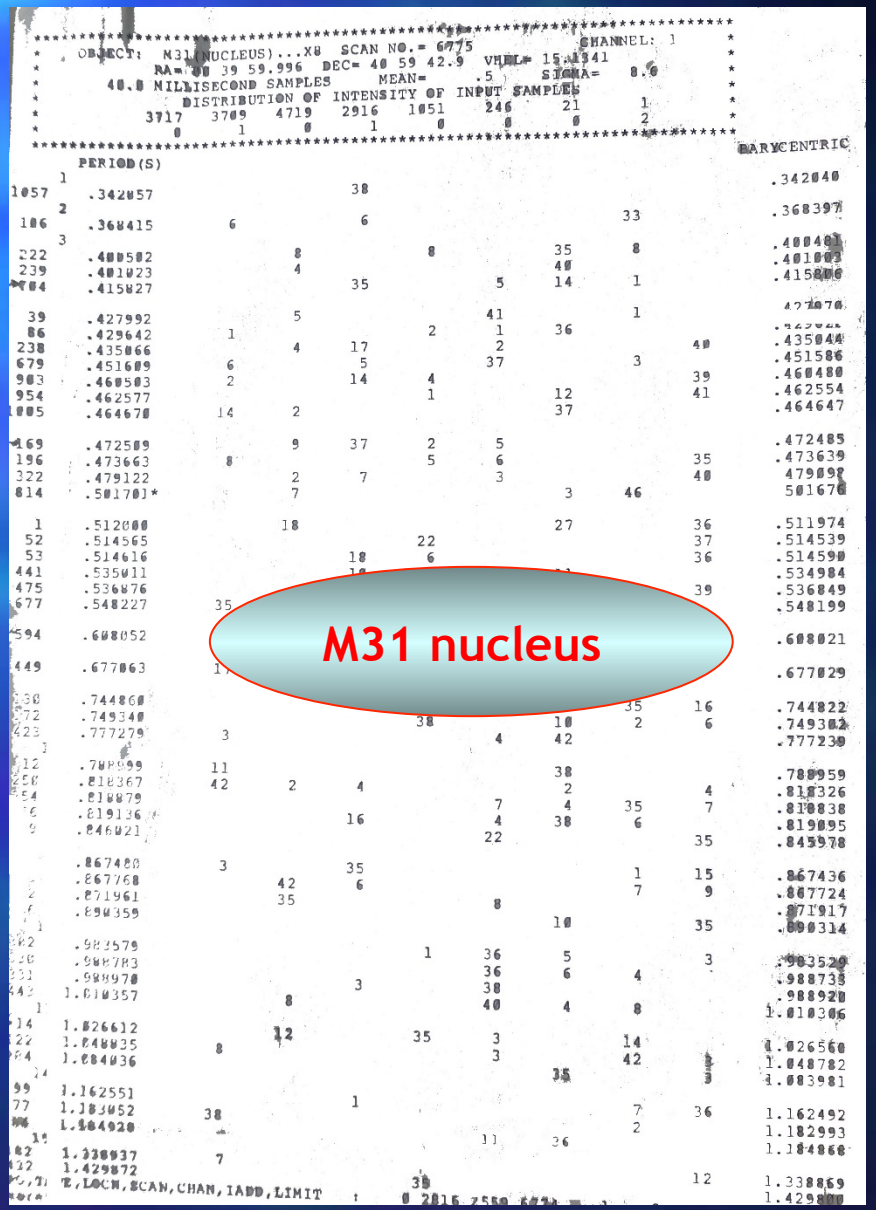
Jodrell Bank – The Pulsar Search System

Telescope:	**MK1A (Lovell telescope)**
Frequency:	**408 MHz**
Bandwidth:	**4 MHz**
Beam width:	**0.75°**
Sensitivity:	**> 1.2 K/Jy**
Technique:	**Periodicity search**
Integration time:	**10^m 55^s**
Sampling interval:	**40 ms**
Method of analysis:	**Fast-folding algorithm (FFA)**
Period range:	**0.16 to 4 s**
Other characteristics:	**On-line analysis, gave about two pages of output per integration**

Jodrell Bank – The Pulsar Search discovery records



The dot-printer output



Jodrell Bank pulsar searches

Project leaders

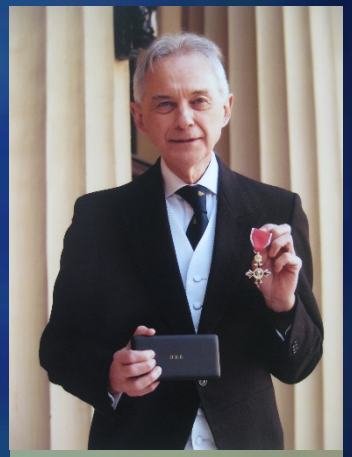
Professor
J.G. Davies

Professor
Andrew Lyne

Jodrell Bank – The discovery of the 100th pulsar

The piglet and the champagne!

Sir Francis Graham-Smith

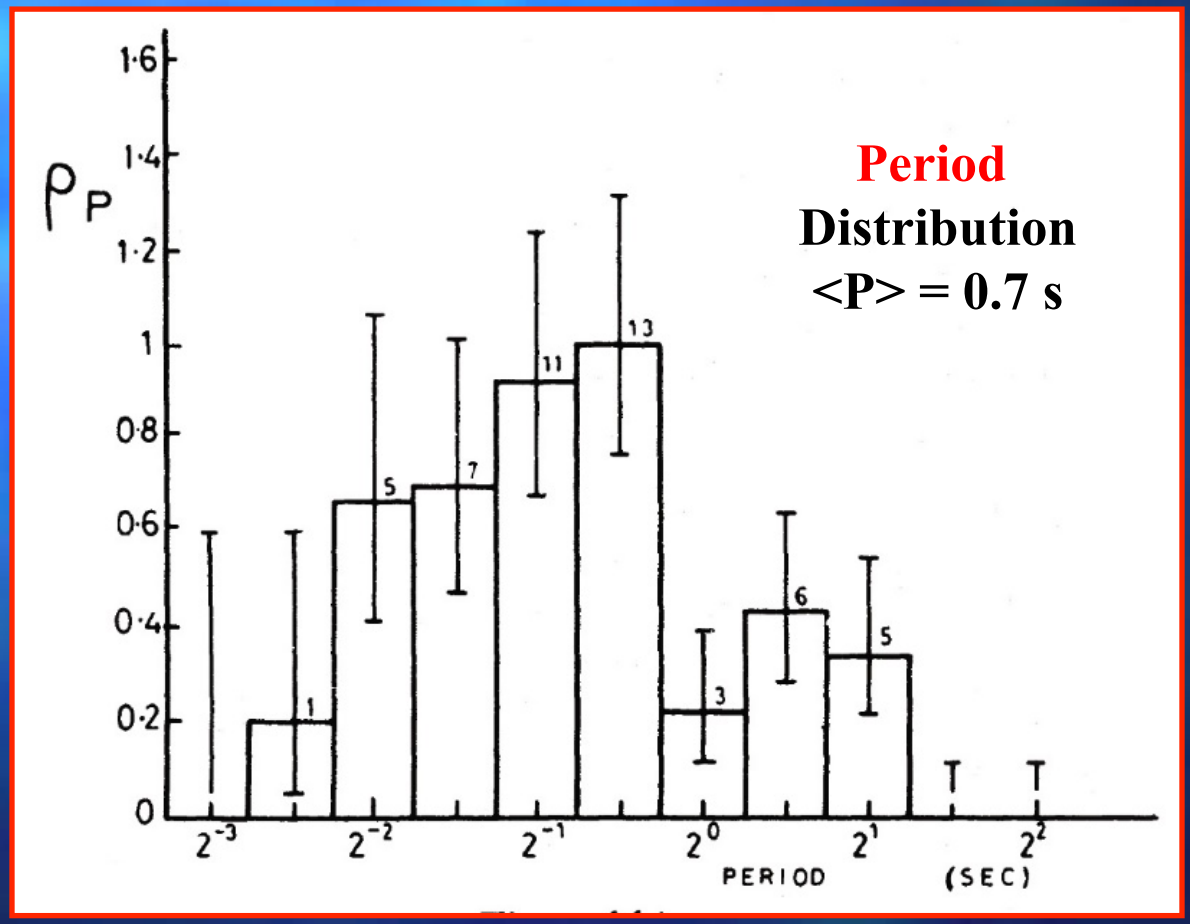


Professor R.J. Davis

Basic Statistics

By the end of 1973 more than a hundred pulsars had been discovered.

Time for some basic statistics.



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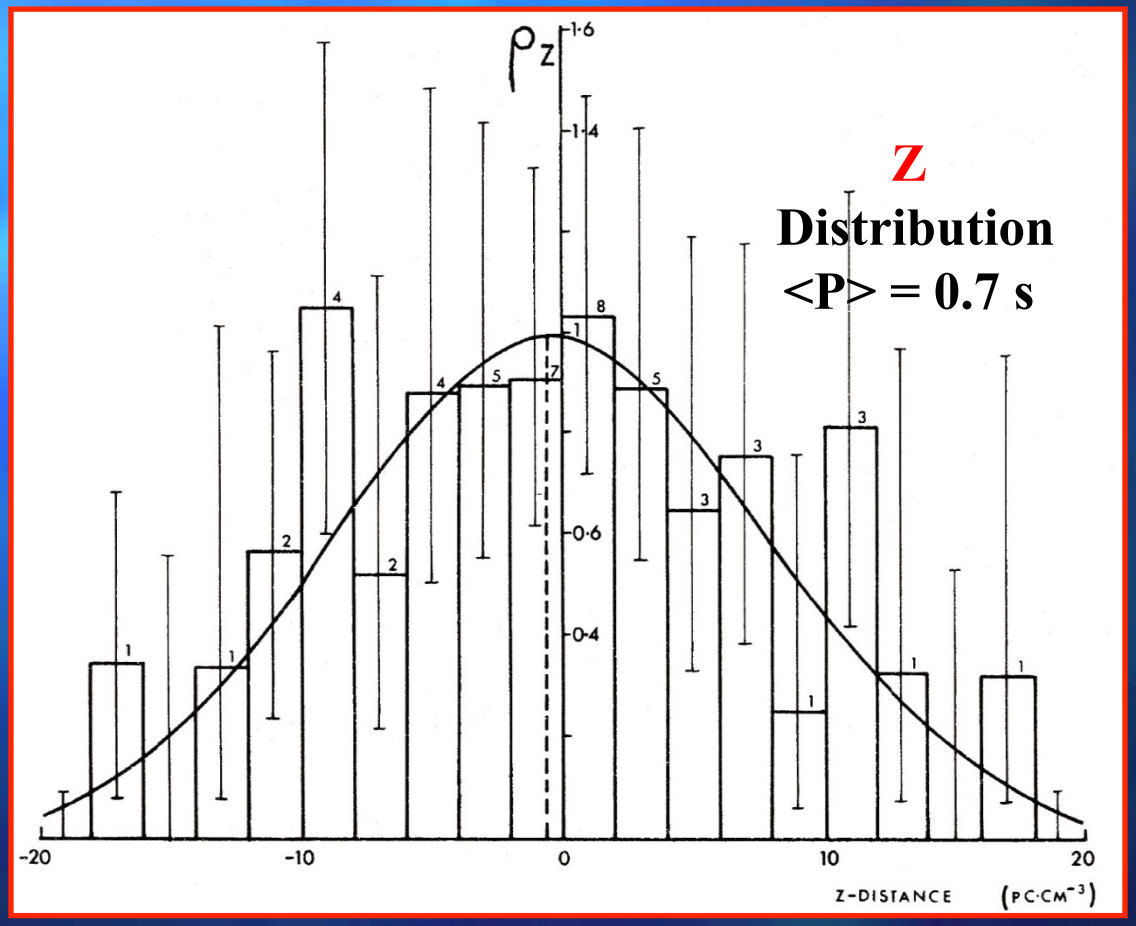

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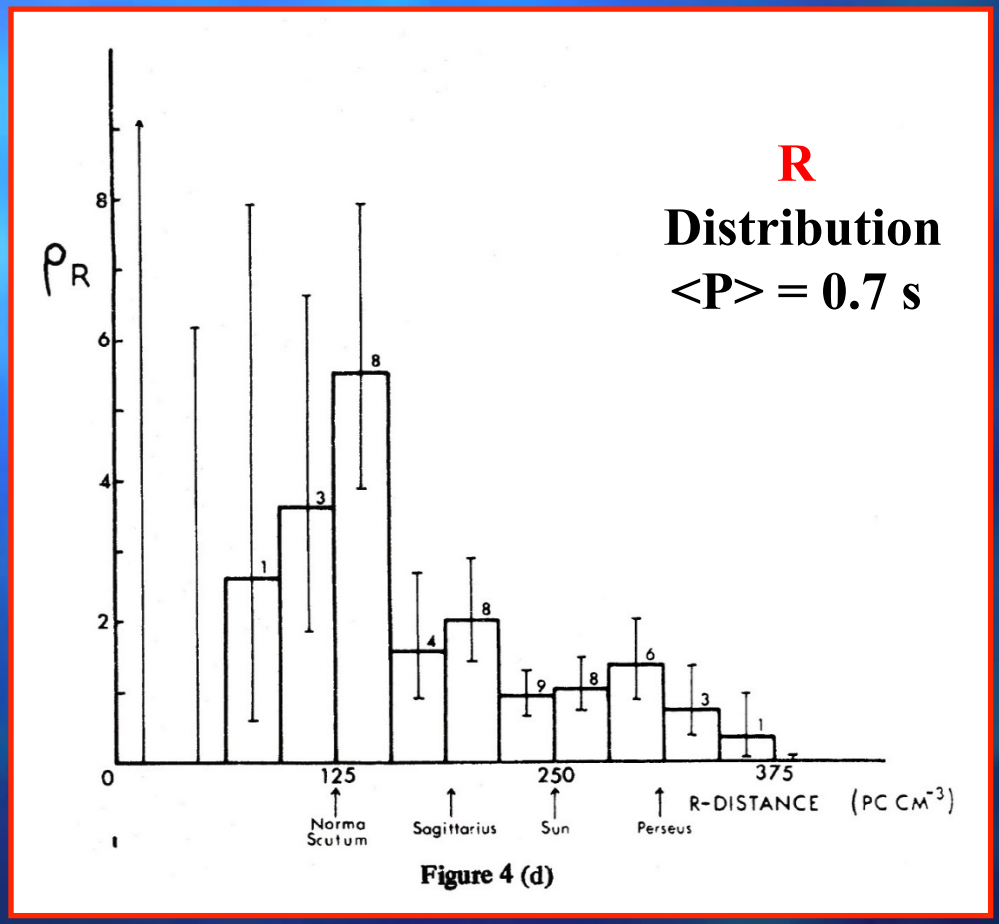


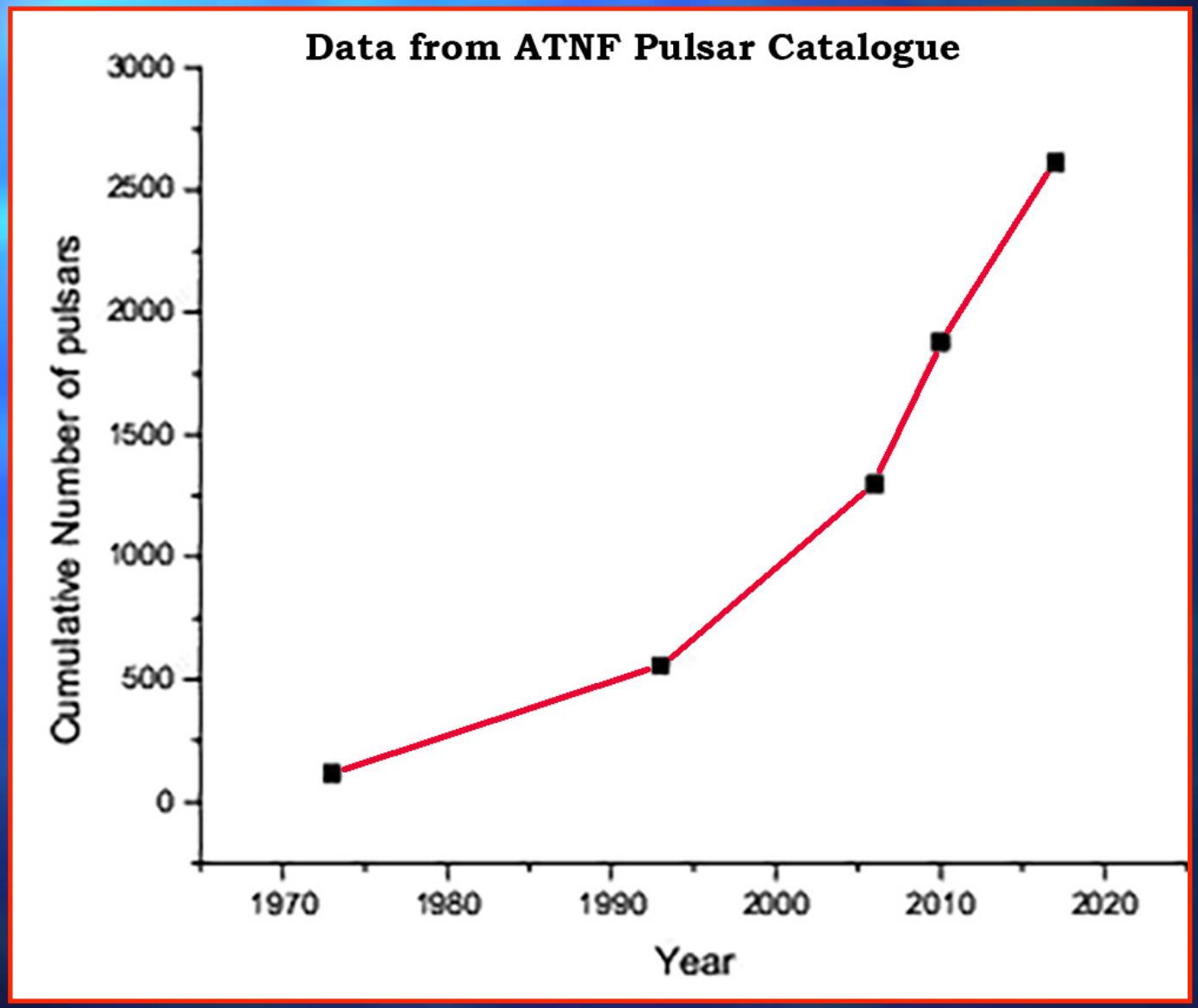
Figure 4 (d)

R

Distribution

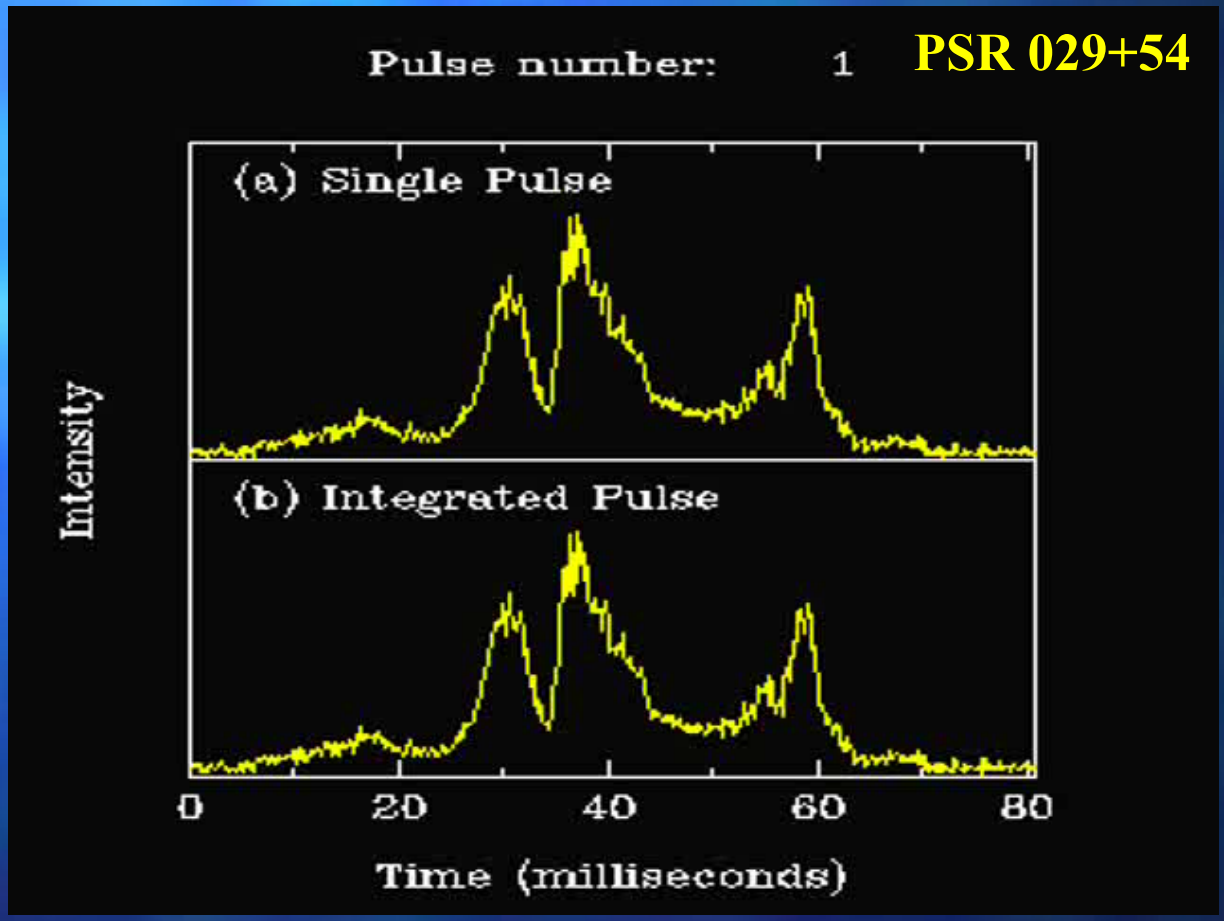
<P> = 0.7 s

The explosive rate of pulsar discovery



Single pulses

The thrill of listening to pulsar sounds



Video: Dunc Lorimer Audio: Michael Kramer

Thank you all
and thank you Tasso for organizing this conference.