PROPOSAL   FOR   JOINING LSC

SANJEEV   DHURANDHAR

Inter-University Centre

for

Astronomy & Astrophysics

PUNE, INDIA

BACKGROUND

IUCAA: Premier Institute in India in A & A

Several branches in A & A

Academic Staff : Faculty + post-docs + students

+ Associates from Indian Universities

JOINED IUCAA IN 1989

PEOPLE

B. S. Sathyaprakash & P. Das Gupta

Grad   Students

K. Jotania
R. Balasubramanian
V. Chickarmane
S. Mohanty

A. Pai
A. Sengupta

Post - Docs

B. Bhawal

S. Bose

COLLABORATIONS

- Cardiff :   B. F. Schutz - (> 87)

- Orsay :   J-Y Vinet & P. Hello (> 94)

- Australia: D. G. Blair , J. Sandeman,

   D. McClelland   (> 91)

- Potsdam: E. Chassande-Mottin , A. Vecchio

   (> 99)

PAST WORK RELEVANT TO LIGO

- 1-detector search for coalescing binary inspirals

    BSS & SVD

- Hierarchical Search

    S. Mohanty & SVD

- Parameter Estimation

    R. Balasubramanian, BSS & SVD

    About 30 publications in GW

MULTI - DETECTOR SEARCH FOR CBS
(our approach)

- Maximum Likelihood

- Assumptions :
  - Gaussian stationary noise + non-G bursts
  - Noise between detectors uncorrelated
  - Arbitrary locations & orientations

GENERAL   METHOD

- Correlations needed   for intrinsic parameters

    - masses , spins ----- FTs

- Direction search over a time-delay window

    - Costs involved in computing the statistic

- Veto   out   non-Gaussian bursts

SPECIFIC   PROBLEM

- Newtonian Waveform for simplicity

  - 1 mass parameter

  - total no. of parameters : 8

- Analytical maximisation

  amplitude, initial phase,

  binary orbit   orientation

- FT over time-of-arrival

- Filter bank over directions & mass par

PROPOSED WORK IN LSC

Two site analysis important for LIGO

More general analysis for a bigger network: LIGO, GEO, VIRGO

Non-Gaussian noise

CONCLUDING   REMARKS

- Group strength:

SVD	A. Pai	R. Nayak
	A. Sengupta	T. Das

- Institutional support:

  Infrastructure, Manpower, Computers

- Application for DST grant on the basis of the collaboration