Chennai group in the Belle upgrade

Rahul Sinha

The Institute of Mathematical Sciences

Taramani, Chennai 600113

INDIA

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The Institute Of Mathematical Sciences

The Institute of Mathematical Sciences (**IMSc**), founded by Alladi Ramakrishnan in 1962, is a national institution for fundamental research in the mathematical and physical sciences. The Institute is governed by a Board and an Academic Council. The present Director of the institute is Prof. R. Balasubramanian.

Research at **IMSc** is supported by the Department of Atomic Energy of the Government of India and by the Government of Tamil Nadu. Institute members work primarily in the areas of Mathematics, Theoretical Computer Science and Theoretical Physics.

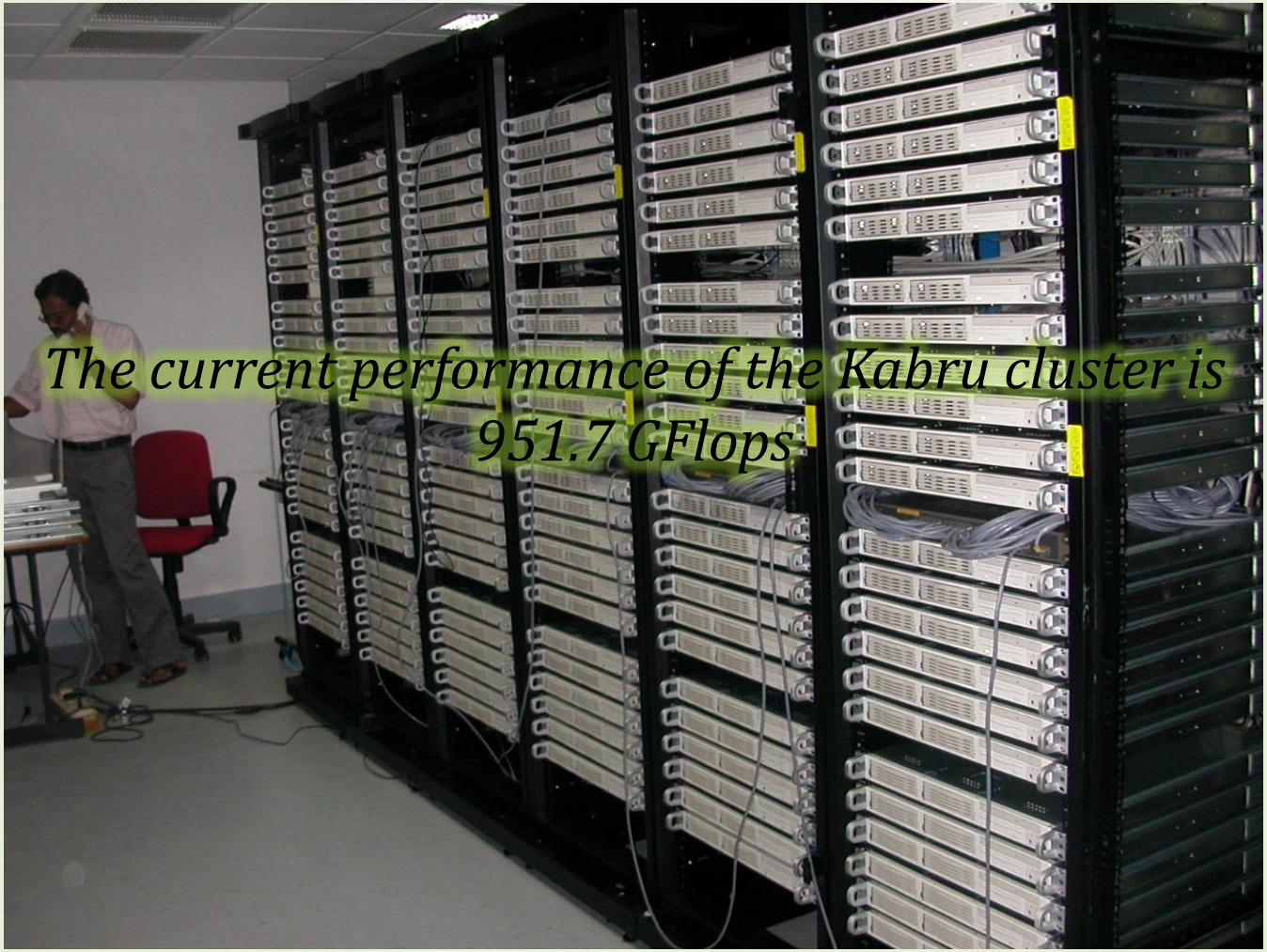
The Institute has an active graduate research program to which a select group of students are admitted every year to work towards a Ph.D. degree. **IMSc** hosts a large number of scientists at the post-doctoral level and supports a vibrant Visiting Scientist Scheme. More information is available under Academic Programmes at IMSc

IMSc has an outstanding scientific library, a computing facility which contains the fastest academic computer in India (as of mid 2004) and a dedicated high-speed network. The Institute hosts several national and international scientific meetings every year. The Institute Annual Reports summarize past and ongoing research.

A new, centrally air-conditioned office and lecture-hall complex houses academic members of **IMSc**. A 200 seat auditorium, the Ramanujan auditorium, is used for large scientific meetings while smaller lecture halls and classrooms accomodate more modest gatherings. Most public areas in the Institute, including seminar and discussion rooms, lounges and the auditorium are Wi-Fi enabled.

Located in South Chennai, in the Adyar-Taramani area, the Institute is based in the verdant surroundings of the Central Institutes of Technology (CIT) Campus. The Institute campus also contains a student hostel, flatlets for long-term visitors, married students and post-doctoral fellows, and the Institute Guest-House. **IMSc** has its own faculty housing in Tiruvanmiyur near the seashore.

KABRU - 288 CPU LINUX CLUSTER @ IMSC



The current performance of the Kabru cluster is 951.7 GFlops

Director, IMSc has no objection to my (IMSc) joining the Belle and Super B collaboration

- ***Financial***

There would be a modest amount of money available to IMSc members to spend on computing, travel (attending some of the necessary Belle/Super B meetings) and video conferencing once I join (IMSc joins) Belle/Super B. The expenditure as it stands now would be capped at Rs. 10 lakh (about $25,000) per year and would be subject to reviews. The procedure for review will be determined by Director IMSc, as he deems appropriate.

- ***Membership***

I alone will join Belle/Super B efforts at KEK, now. In time as IMSc locates people, IMSc may expand the group.

•Contribution of IMSc to Collaboration

IMSc will contribute mainly in terms of Physics expertise and the implementation of Physics in the analysis of data. The other contribution from IMSc will be in terms of computing recourses equivalent to a cluster of about 30 (or more) high end PC's, to enable physics simulations at IMSc. It may be possible to hire one trained physicist as visiting faculty (at Fellow E level) for a maximum period of 3 years (per candidate), to help with physics simulations/collaboration activities here.

- *Physics*
- *Computing 30+ nodes*
- *1 visiting faculty position*

I am trying to put on a double hat (both theorist and experimentalist) like George Hou. But, I know it is not possible to emulate his success. Please don't expect the same results.

High Performance Computing Machines already at IMSc

System	CPU	RAM	InterConnect
csc (9 nodes)	Dual CPU Inel Xeon 2.4GHz	1 GB per node	Gigabit Ethernet
Kabru (144 node)	Dual CPU Intel Xeon 2.4 GHz	2 GB per node	Dolphins Wolfkit 3D
Vindhya (Cray XD1)	24 Dual Core AMD Opteron 2.4 GHz	1 GB per CPU	Cray Rapid Array Inter Connect.
Sun Fire X4600 server SMP (Four systems)	8 Quad Core AMD Opteron	1 GB per core (32 GB)	Gigabit Ethernet

Thanks to Raveendra Reddy for preparing this table

Name of the Cluster: **Kabru**
Type: **Linux Cluster**
Processor Type : **Intel Dual Xeon @ 2.4 Ghz**
Motherboard: **Supermicro X5DPA-GG**
Chipset: **E7501 533 FSB**
Memory: **2 GB DDR RAM** per node for **120** nodes and **4 GB DDR RAM** per node for **24** nodes
Interconnect Type : **Dolphin 3D SCI**
OS : **Redhat Linux 8.0**

Just acquired

Sun Fire X4600 Server
8 Quad core CPU, 2.3GHz, AMD
8X2GB DDR2-667 ECC Reg RAM
4x146GB 10K RPM SAS HDD
4x10/100/1000 BaseT Ethernet
Cost :US$ 20,732 per piece

Before next month :

Major Computer purchase at IMSc ….

Planning to acquire either Blue Gene /P or a cluster of 500 to 1000 CPU (Optron AMD or Intel Xeon) as a central facility of IMSc.

I should be able to get 30+ nodes dedicated for our work…

There is no lab or experimental facility at IMSc. We will examine the possibility of contributing towards hardware. We will work coherently with other Indian Belle Groups.

Students and Research Associates who join the group can help in hard work hardware activity or other service tasks at KEK as required by Belle.

Need help in recruiting the experimental (visiting)faculty .

Physics Interests

Commitment for a successful experimental B physics program. *Precision flavor physics offers unique probes to New Physics. Large numbers of B mesons will be produced ...*
I hope first signals of New Physics appear in the flavor sector.

As a theoretician (phenomenologist) I have been interested in analysis of modes used to measure weak phases and probe new physics. With the dual hat of an experimentalist on, I would like to help in the analysis of these modes.

My interests are in $B \to VV$, $B \to K^* ll$, rare decays, D Physics ....

As you may guess, I have (more immediate) interest in $B \rightarrow VV$ modes. I have propose to study $B \rightarrow VV$ modes that are not already being looked at currently by Belle. We will keep things ready for the analysis Super B produces data

"For service work the obvious match to your institute is large scale Monte Carlo generation. Perhaps work on the MC matrix elements for $B \rightarrow V V$ modes would also match your interests and strengths."

Tom Browder

As a phenomenologist (theorist) it is essential for me to collaborate in this effort with other groups to become operational at Chennai.