UWM Milestone Report:
Hierarchical Matched Filtering Code

• Architecture of the design: Master/Slaves.  
  **Master**: distributes data, template lists, gets events back from Slaves.  
  **Slaves**: requests template lists, data, does filtering.

• Design is **Slave-driven**:  
  **Master** loops, servicing slave requests.  
  **Slaves**: makes requests to **Master** for data, template lists, returns event lists to **Master**.
First Milestone: 11/30/1999

**Master Code Complete**

- Completed in mid-December 1999.
- **Master** code in LAL release of 12/20/1999.
- Some subsequent evolution as LAL standard evolves.
- **Master** code will make use of Cardiff Template Bank Placement routines: structures agreed on for exchange of template parameters.
Where is the code?
In the LIGO Algorithm Library (LAL)

• In the LAL subdirectory packages/
  – Communications routines: packages/comm
  – Filtering routines: packages/findchirp
  – Data buffering: packages/framedata

• Documentation and test code in corresponding subdirectories
Design Flexibility

• Communications routines are isolated, and general purpose. Based on MPI. Can be replaced if needed for LDAS.
• Input/Output routines are isolated, and can also be replaced if needed for LDAS.
• No “built-in” assumptions about the nature of the waveforms/template bank.
Architecture of Master

- Allocates memory, creates & clears buffers, variables
- Enters main loop:

```java
while (numProcs > 1) {
    get message from slave then switch {
        • if message == template bank: create/refine bank;
        • if message == return template parameters: return param list;
        • if message == get data: send data to slave;
        • if message == event list: get event list from slave;
        • if message == slave finished: numProcs--;
    }
}
Upcoming Milestone 2/29/2000: Slave code complete

• Work underway
• Being slowed down somewhat because of the continuing evolution of the LAL
• To simplify architecture and make logical flow more “linear” slave implemented with a linked list