TI BLAS 3.11.0 Delivery

TEXAS INSTRUMENTS

Where is the BLAS Release

- GIT Server: git.ti.com

- Repository URL: git@git.ti.com:blas-lib/blas-lib.git

- TAG: BLAS.03.11.00.01

- This BLAS release is generated based on the modified version of ATLAS 3.11.0. It is available at:

http://sourceforge.net/projects/math-atlas/files/Developer%20%28unstable%29/3.11.0/

- The updated ATLAS (most likely 3.12.0) will be available soon

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What is in the Package

- blas-lib
  - blas (ECPY version of the BLAS)
    - **packages/ti/blas/example** – example code folder
    - **packages/ti/blas/inc** – header file folder
    - **packages/ti/blas/lib** – library file folder
    - **packages/ti/blas/runscript** – C6678 EVM emulation environment setup folder

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Testing Environment Setup (1)

- PC with Ubuntu 12.04 LTS

- C6678EVM LE connected to PC via USB

- CCS5.2 installed at /opt/ti/ccsv5 http://software-dl.ti.com/dsps/forms/self_cert_export.html?prod_no=CCS5.2.0.00069_linux.tar.gz&ref_url=http://software-dl.ti.com/dsps/dsps_public_sw/sdo_ccstudio/CCSv5/CCS_5_2_0/

- CGT7.4.2 installed at /opt/ti/TI_CGT_C6000_7.4.2
  https://www-a.ti.com/downloads/sds_support/TICodegenerationTools/index.htm

- XDCTools3.25.02.70 installed at /opt/ti/xdctools_3.25.02.70 http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/rtsc/3.25.02.70//exports/xdctools_setuplinux_3.25.02.70.bin

- "xdctools" is set up as the symbolic link pointing to /opt/ti/xdctools_3.25.02.70

- Bios6.35.4.50 installed at /opt/ti/
  http://downloads.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/sysbios/6_35_04_50/exports/bios_setuplinux_6_35_04_50.bin

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Testing Environment Setup (2)

- mcsdk_3_00_03_15 installed at /opt/ti http://software-dl.ti.com/sdoemb/sdoemb_public_sw/bios_mcsdk/latest/exports/bios_mcsdk_03_00_03_15_setuplinux.bin

- omp_2_01_09_00 installed at /opt/ti

- pdk_C6678_2_1_3_7 installed at /opt/ti

- edma3_lld_02_11_10_09 installed at /opt/ti
  http://software-dl.ti.com/dsps/dsps_public_sw/sdo_tii/psp/edma3_lld/edma3-lld-bios6/02_11_10_09/exports/edma3_lld_02_11_10_09.tar.gz

- xdais_7_23_00_06 installed at /opt/ti
  http://downloads.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/xdais/7_23_00_06/exports/xdais_7_23_00_06.tar.gz

- framework_components_3_30_00_06 installed at /opt/ti http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/fc/3_30_00_06/exports/framework_components_3_30_00_06.tar.gz

- ipc_1_24_03_32 installed at /opt/ti
  http://downloads.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/ipc/3_00_04_29/exports/ipc_setuplinux_3_00_04_29.bin

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How to Run Examples (Command Line)

- ECPY example
  - cd **packages/ti/blas/example**
  - source sourceme.sh
  - make clean
  - make all
  - make run

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How to Run Examples (CCS 5.2 GUI)

- ECPY example (sgemm)
  - Launch CCS 5.2 GUI
  - Import project from `packages/ti/blas/example/Setup_ECPY/app/build/ccs`
  - Build the project
  - Load and execute ecpy_example.out
- ECPY example (matrix_vector)
  - Launch CCS 5.2 GUI
  - Import project from `packages/ti/blas/example/Setup_ECPY/app/build/ccs`
  - Replace sgemm.c with matrix_vector.c
  - Build the project
  - Load and execute ecpy_example.out

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How ECPY Example Works

- "make all"
  - First it builds the Setup_ECPY (setup_ECPY.c -> setup_ECPY.obj)
  - It then compiles the sgemm.c and matrix_vector.c with their main() renamed to main_C6678() by using "-Dmain=main_C6678" in Makefile
  - sgemm.obj and matrix_vector.obj will be linked with setup_ECPY.obj, appRman.obj, appEdmaConfig.obj and algIres.obj to make sgemm.out and matrix_vector.out respectively

- "make run"
  - runscript/mmsetup will be called to establish JTAG (XDS-560v2) connection to the C6678 EVM LE
  - runscript/mmrun will load and execute sgemm.out and matrix_vector.out on C6678 EVM LE one by one
    - The main() in setup_ECPY.c will initialize the cache and the EDMA, then call the main_C6678() to do the matrix operations with ECPY enabled BLAS
    - After the main_C6678() returns, the main() in setup_ECPY.c will release the resources for EDMA and then exit the program
 - runscript/mmterminate will terminate the JTAG connection

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How BM Example Works

- "make all"
  - It builds the sgemm.out, matrix_vector.out and cache_setup.out

- "make run"
  - runscript/mmsetup will be called to establish JTAG (XDS-560v2) connection to the C6678 EVM LE
  - runscript/mmsetup will then load and execute cache_setup.out on C6678 EVM LE to configure the cache
  - runscript/mmrun will load and execute sgemm.out and matrix_vector.out on C6678 EVM LE one by one
  - runscript/mmterminate will terminate the JTAG connection
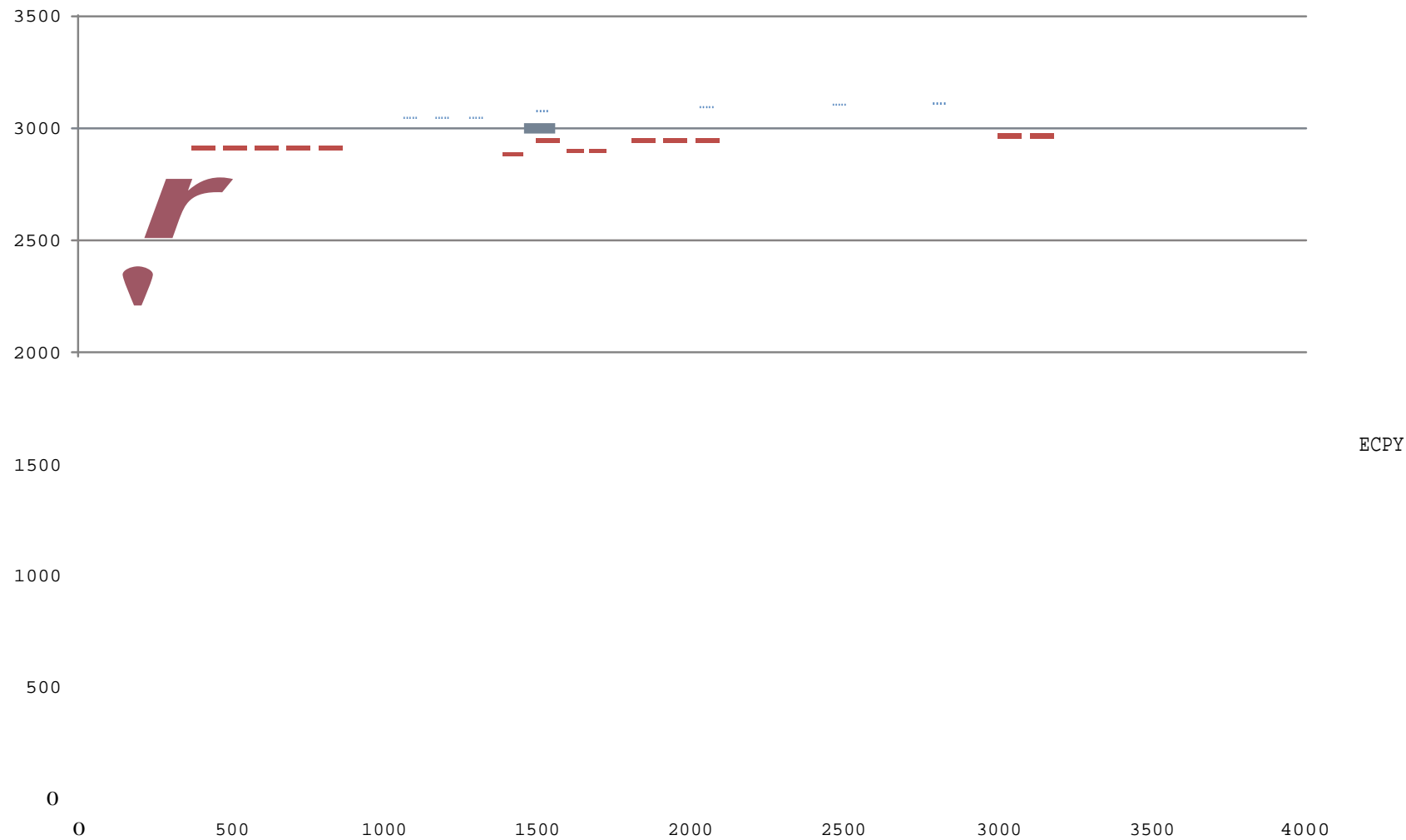
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Expected Results

- sgemm expected output:

  [367.76, 368.12

  674.06, 674.72]

- matrix_vector expected output:

  3.0 1.0 3.0
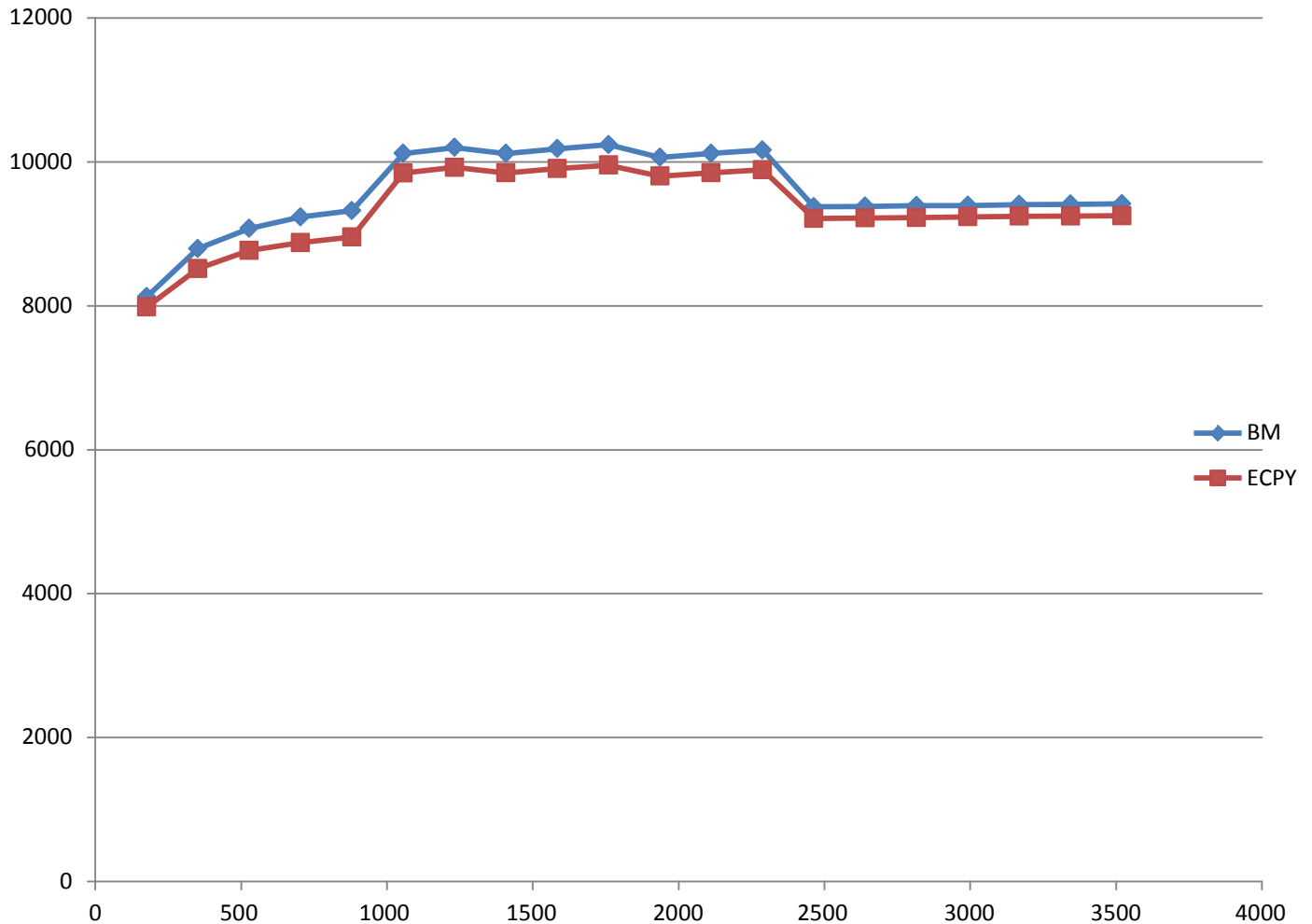
  1.0 5.0 9.0

  2.0 6.0 5.0

  -1.0

  3.0

  -3.0

ECPY Performance (Single)

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ECPY Performance (Double)

ECPY

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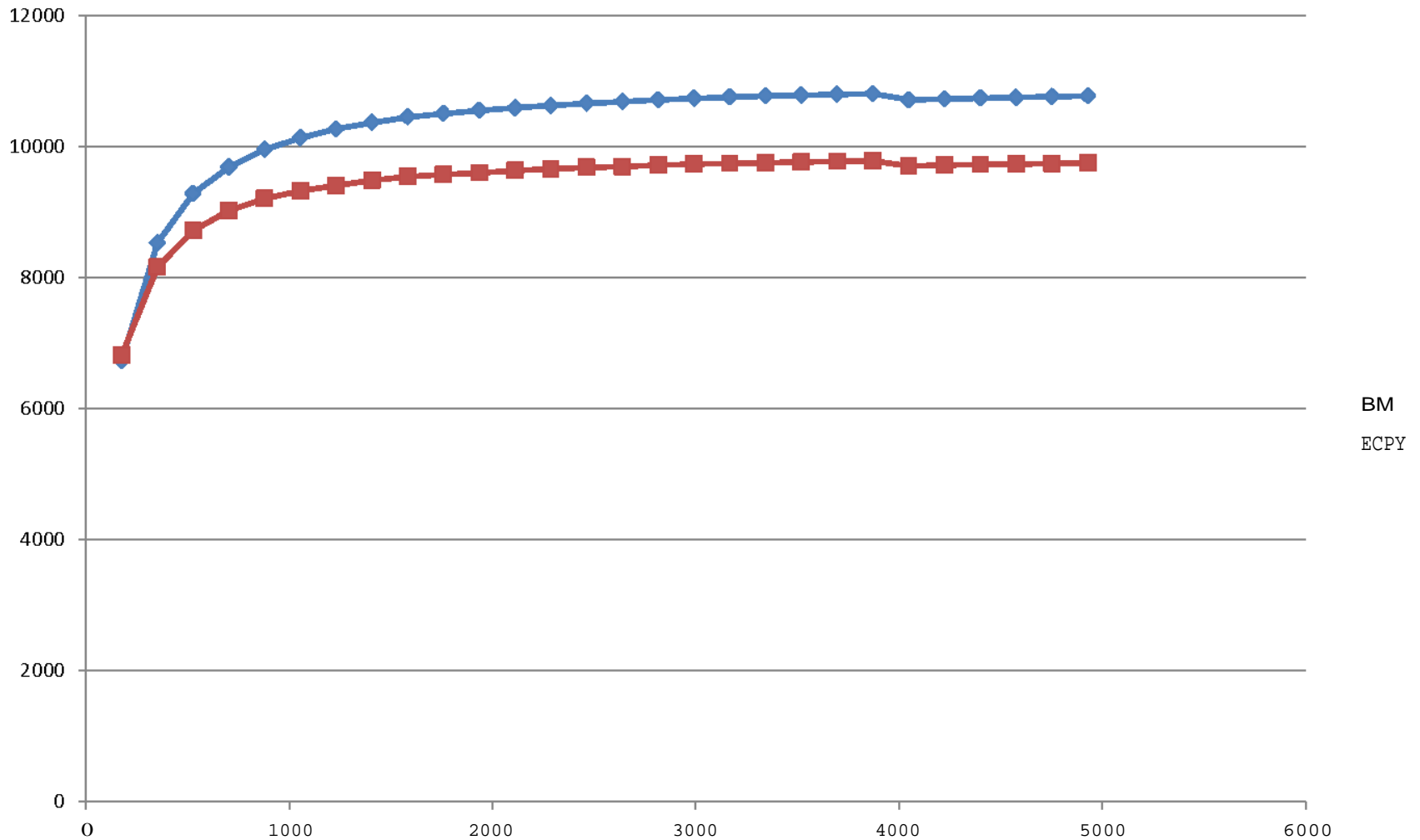
ECPY Performance (Single Complex)

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ECPY Performance (Double Complex)

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