



ATF2 Mover Software

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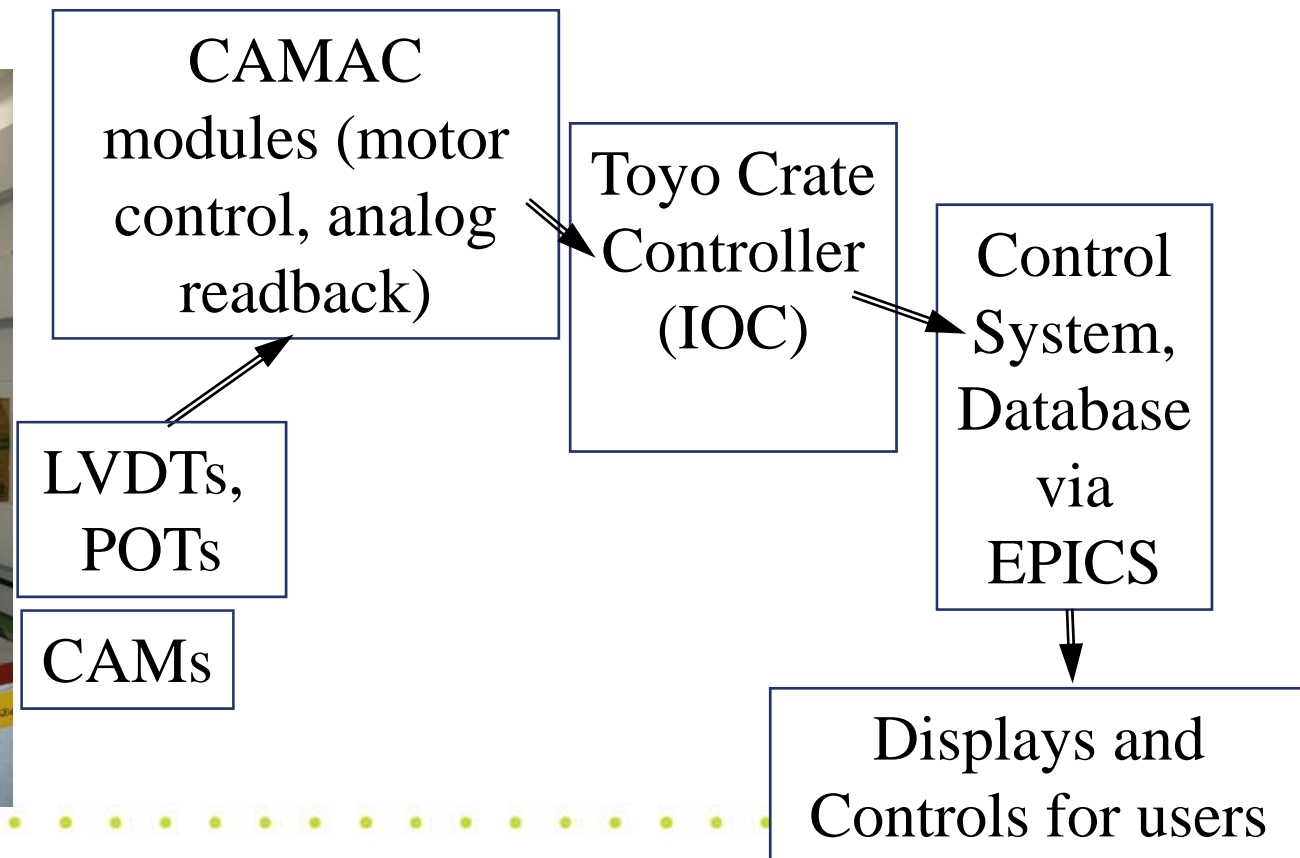
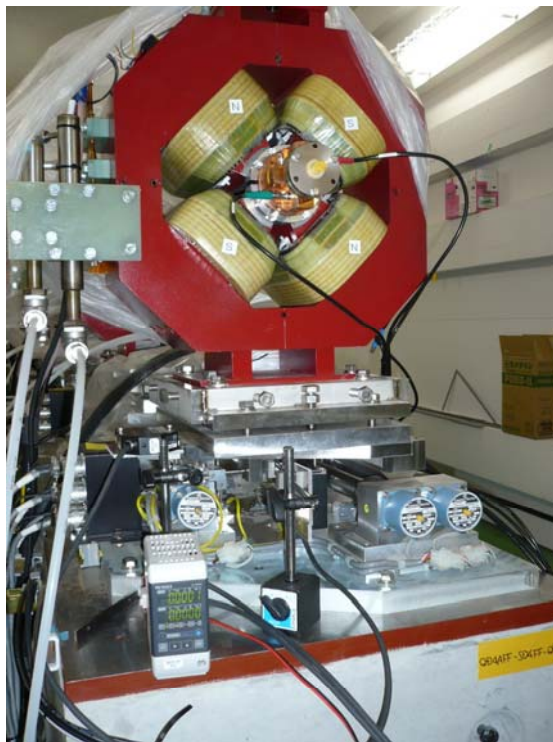
Overview

- Goal
- Setup
- Current Status
- Future Plans save/restore, archiving,

- Goal
 - **Move the ATF2 magnets (quadrupoles & sextupoles) in a repeatable manner to keep their magnetic center aligned with the center of the beam line**
- Basic Functionality
 - **Provide magnet position**
 - **Given a new requested position, move motors and recalculate the magnet position.**

Setup

- Control & readout through EPICS via Toyo CAMAC crate controller to mover table on 3 cams with motors and readback.





Toyo + IOC

- **Toyo CAMAC crate controller**
 - **Runs Linux**
 - **Shares nfs space with atfsad (et al?)**
 - **Camac command library allows communication with modules**
- **EPICS IOC**
 - **Runs on the Toyo**
 - **Use Asyn as wrapper to call Camac commands from EPICS database.**
 - **Use database subroutines to calculate positions from pot & lvdt readbacks and to calculate the number of motor steps required to go to a requested position.**



User Interface

- Usual EPICS channel access tools
- EDM displays
 - Usual disclaimer

			<input type="button" value="EXIT"/>
QM16	<input type="button" value="Mover Display"/>	QD6	<input type="button" value="Mover Display"/>
QM15	<input type="button" value="Mover Display"/>	QF5B	<input type="button" value="Mover Display"/>
QM14	<input type="button" value="Mover Display"/>	SF5	<input type="button" value="Mover Display"/>
QBPM4	<input type="button" value="Mover Display"/>	QF5A	<input type="button" value="Mover Display"/>
QM13	<input type="button" value="Mover Display"/>	QD4B	<input type="button" value="Mover Display"/>
QM12	<input type="button" value="Mover Display"/>	SD4	<input type="button" value="Mover Display"/>
QM11	<input type="button" value="Mover Display"/>	QD4A	<input type="button" value="Mover Display"/>
QD10B	<input type="button" value="Mover Display"/>	QF3	<input type="button" value="Mover Display"/>
QD10A	<input type="button" value="Mover Display"/>	QD2B	<input type="button" value="Mover Display"/>
QF9B	<input type="button" value="Mover Display"/>	QD2A	<input type="button" value="Mover Display"/>
SF6	<input type="button" value="Mover Display"/>	SF1	<input type="button" value="Mover Display"/>
QF9A	<input type="button" value="Mover Display"/>	QF1	<input type="button" value="Mover Display"/>
QD8	<input type="button" value="Mover Display"/>	SD0	<input type="button" value="Mover Display"/>
QF7	<input type="button" value="Mover Display"/>	QD0	<input type="button" value="Mover Display"/>



More EDM Displays

- Main Mover Display
 - Pot & LVDT readouts
 - Updated at 1/2 Hz
 - Calculated positions
 - Enter position changes
 - See motor steps sent
 - Access to diagnostic panels

QF9B EXIT
Crate 1 Mover 10 qmovMain

Update Readback Disable Updating

Pots (Volts)		LVDTs (Counts, um)	
c1:qmov:m10:pot1	5.00012	Raw	Converted
c1:qmov:m10:pot2	4.99890	c1:qmov:m10:lvdt127	4.77266
c1:qmov:m10:pot3	5.00146	c1:qmov:m10:lvdt224	4.25897
		c1:qmov:m10:lvdt3-43	-7.56171e+00

Calculated X, Y, and Tilt		
	UsePOTs	TheOtherThing
c1:qmov:m10:x	-1.22351e+00	-7.82248e+00
c1:qmov:m10:y	9.21279e-01	4.51581e+00
c1:qmov:m10:tilt	5.59788e-06	3.13033e-06

Desired change to x, y, and tilt from current position

		UseSLC
c1:qmov:m10:moveCMD:x	0.00000e+00	0.0000e+00
c1:qmov:m10:moveCMD:y	0.00000e+00	0.0000e+00
c1:qmov:m10:moveCMD:tilt	0.00000e+00	0.0000e+00

Calculated Motor Steps

Motor 1	0.00000
Motor 2	0.00000
Motor 3	0.00000

Calculated Pot Volts

Pot 1	0.00000
Pot 2	0.00000
Pot 3	0.00000

Diagnosics Coords OK Move Movers
Constants Done.
All Movers Go to 5V
Crate 1 Motor 10



EDM Diagnostic Display

- Diagnostic Display
 - LVDT pedestals
 - Calculated positions
 - Send steps directly to motor
 - Set source for x, y, tilt calculations
 - Ideally can watch the number of steps the motor has yet to complete (future SNL code)

QF9B EXIT

Crate 1 Mover 10

c1:qmov:m10:pot1 5.00012 Update Readback

c1:qmov:m10:pot2 4.99890

c1:qmov:m10:pot3 5.00146 Disable Updating

	Raw	Ped	Converted	
c1:qmov:m10:lvdt127	0	0	4.77266	Set Peds
c1:qmov:m10:lvdt224	0	0	4.25897	
c1:qmov:m10:lvdt3-43	0	0	-7.56171e+00	

c1:qmov:motor1:stepdiag 0.00000 0 Steps Send Steps

c1:qmov:motor2:stepdiag 0.00000 0 Steps Send Steps

c1:qmov:motor3:stepdiag 0.00000 0 Steps Send Steps

	"Normal"	"Alternative"	
c1:qmov:m10:x	-1.22351e+00	-7.82248e+00	UseSLC
c1:qmov:m10:y	9.21279e-01	4.51581e+00	
c1:qmov:m10:tilt	5.59788e-06	3.13033e-06	UsePOTs

stop! 1073951923 Done. Done.

Constants		
c1:qmov:m10:motor1:nStepsRemain	0.00000	0
c1:qmov:m10:motor2:nStepsRemain	0.00000	0
c1:qmov:m10:motor3:nStepsRemain	0.00000	0
	0	

All Movers

Crate 1 Motor 10



EDM Constants Display

- Constants Display
 - Constants originally loaded from an easy to edit excel spreadsheet
 - EDM display allows user edit
 - Will need save/restore function to maintain changes

<i>Constants for c1:qmov:m10</i>		cam1:	cam2:	cam3:	
name	<input type="text" value="QF9B"/>	offsX	<input type="text" value="2.90500e+05"/>	<input type="text" value="-3.49250e+04"/>	<input type="text" value="3.49250e+04"/>
update	<input type="text" value="80603"/>	offsY	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>
bore:offsX	<input type="text" value="145250"/>	offsRot	<input type="text" value="0.00000e+00"/>	<input type="text" value="2.35619e+00"/>	<input type="text" value="7.85398e-01"/>
bore:offsY	<input type="text" value="123952"/>	potMin	<input type="text" value="-2.00000e-01"/>	<input type="text" value="-2.00000e-01"/>	<input type="text" value="-2.00000e-01"/>
bore:offsRot	<input type="text" value="0"/>	potMax	<input type="text" value="1.02000e+01"/>	<input type="text" value="1.02000e+01"/>	<input type="text" value="1.02000e+01"/>
lvdt:chan	<input type="text" value="6"/>	potZAngle	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>
lvdt:offsX	<input type="text" value="0"/>		lvdt1:	lvdt2:	lvdt3:
		X	<input type="text" value="8.20500e+04"/>	<input type="text" value="8.20500e+04"/>	<input type="text" value="0.00000e+00"/>
lvdt:offsY	<input type="text" value="0"/>	Y	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>	<input type="text" value="8.33000e+04"/>
lvdt:offsRot	<input type="text" value="0"/>	cal	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>
		n1	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>	<input type="text" value="0.00000e+00"/>
		n2	<input type="text" value="1.76770e-01"/>	<input type="text" value="1.77460e-01"/>	<input type="text" value="1.75850e-01"/>
		n3	<input type="text" value="-1.83000e-01"/>	<input type="text" value="-1.22000e-01"/>	<input type="text" value="-8.17000e-01"/>
		n4	<input type="text" value="1.10200e-10"/>	<input type="text" value="1.11400e-10"/>	<input type="text" value="1.10600e-10"/>



Future Needs/Wants/Wishes

- “Trim” function
 - Takes a requested position and iteratively moves the motors and checks to see if the resulting position is close enough as defined by some user-set tolerances.
 - Probably implemented in SNL
- Constants are still constant
- Make displays consistent
- Save/restore