RHIC BPM Position Calculation

This information was culled from airv509.c
Chris Degen - July 22, 2005

```
#define  FLASHCOEFBASE00DB CONFIG_PREFERENCES+0x60
#define  FLASHCOEFBASE20DB CONFIG_PREFERENCES+0xE0
#define  FLASHCOEFBASE40DB CONFIG_PREFERENCES+0x160

   //retrieve correct coefficients from FLASH
   switch(infoblk.gain)
        {
        case 0:  coefptr = (int *) FLASHCOEFBASE00DB;
                 break;
        case 1:  coefptr = (int *) FLASHCOEFBASE20DB;
                 break;
        case 2:  coefptr = (int *) FLASHCOEFBASE40DB;
                 break;
        default: coefptr = (int *) FLASHCOEFBASE00DB;
                 break;
        }

   c1 = GetValFromFlash(coefptr+0x04,3);
   c2 = GetValFromFlash(coefptr+0x08,3);
   c3 = GetValFromFlash(coefptr+0x0C,3);
   c4 = GetValFromFlash(coefptr+0x10,3);
   c5 = GetValFromFlash(coefptr+0x14,3);
   c6 = GetValFromFlash(coefptr+0x18,3);
   c7 = GetValFromFlash(coefptr+0x1C,3);
   c8 = GetValFromFlash(coefptr+0x20,3);
   c9 = GetValFromFlash(coefptr+0x24,3);
   c8divc9 =  ((float) c8 / (float) c9);



         arawpos = (*(p+2) + 0x8000) & 0xFFFF;
         brawpos = (*(p+3) + 0x8000) & 0xFFFF;

         //calculate amod, bmod
         if (polarity) //positive
           {
           amod = arawpos;
           bmod = brawpos;
           }
         else
           {
           amod = 0xFFFF - arawpos;
           bmod = 0xFFFF - brawpos;
           }

        //calculate acor,bcor
        acor = (float) c1*(c2 + amod);
        bcor = (float) c8divc9 * (c4 + bmod);

        //calculate ratio
        ratio = ((float) (acor - bcor)) / ((float) (acor + bcor));

        //calculate position
        pos = (c5*ratio) + (c6*ratio*ratio*ratio) + c7;
        posint = (int) pos;
```