GammaLib - Bug #1128

2D PSF seems not to work properly for simulated events

02/04/2014 11:20 AM - Knödlseder Jürgen

Status:	Closed	**Start date:**	02/04/2014
Priority:	Immediate	**Due date:**	
Assigned To:	Knödlseder Jürgen	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:	00-08-01		

Description

Christian Farnier noted that the attachment:irf_test.fits IRF file does not lead to a spread of Crab photons as expected from the point spread function.

History

#1 - 02/04/2014 11:21 AM - Knödlseder Jürgen

- Status changed from New to Feedback

- % Done changed from 0 to 100

It turned out that the GCTAPsf2D::mc method did not take into account the special case that the sigma and/or normalization of the second and third Gaussian components are zero. The following code solves this issue

```
double GCTAPsf2D::mc(GRan&         ran,
                     const double& logE,
                     const double& theta,
                     const double& phi,
                     const double& zenith,
                     const double& azimuth,
                     const bool&   etrue) const
{
   // Update the parameter cache
   update(logE, theta);

   // Select in which Gaussian we are
   double sigma = m_sigma1;
   double sum1  = m_sigma1;
   double sum2  = m_sigma2 * m_norm2;
   double sum3  = m_sigma3 * m_norm3;
   double sum   = sum1 + sum2 + sum3;
   double u     = ran.uniform() * sum;
   if (sum2 > 0.0 && u >= sum2) {
      sigma = m_sigma3;
   }
   else if (sum1 > 0.0 && u >= sum1) {
      sigma = m_sigma2;
   }

   // Now draw from the selected Gaussian
   double delta = sigma * ran.chisq2();

   // Return PSF offset
   return delta;
}
```

#2 - 02/06/2014 11:16 PM - Knödlseder Jürgen

- Status changed from Feedback to Closed

Files

irf_test.fits	39.4 KB	02/04/2014	Knödlseder Jürgen