
Subject: Re: Square root of negative number in PndRiemannTrack::dY ?
Posted by [Andreas Pitka](#) on Fri, 15 Mar 2013 10:00:21 GMT
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Hi,

the output of PndRiemannTrack before the crash is the following:

```
-----  
Start Plane from Points: (-1/-1/-1/-1/1) (-1/-1/21/8/1) (-1/-1/23/1/1)  
-I- PndRiemannTrack::addHit 0: 0 0  
-I- PndRiemannTrack::addHit 1: -2.3 4.2  
-I- PndRiemannTrack::addHit 2: -4.5 8.3  
fweight: 3.7e+04  
fav: -3 5.6 46  
sampleCov:  
1.4e+04 -2.6e+04 -4.1e+05  
-2.6e+04 4.8e+04 7.7e+05  
-4.1e+05 7.7e+05 1.2e+07  
eigenVec:  
-0.034 -0.47 -0.88  
0.062 0.88 -0.47  
1 -0.071 1.4e-05  
eigenValues: 1.2e+07 1.6e+02 -7.9e-11  
fn: -0.88 -0.47 1.4e-05  
fc: -8.3e-13  
CovNorm:  
-3.6e-14 6.7e-14 -5.4e-15  
6.7e-14 -1.2e-13 1e-14  
-5.4e-15 1e-14 -8e-16  
covAv:  
2.3e-05 0 -0.00015  
0 3.7e-06 3.3e-05  
-0.00015 3.3e-05 0.0013  
nCrn: 1.9e-05 rCnr: -1.6e-12 trCnCr: -1.5e-19  
jacRXY:  
-1 0 0 -2.6e+09  
0 -3.6e+04 0 -2.3e+09  
0 0 -3.6e+04 -1.2e+09  
temp: 3x4  
temp:  
7.2e-05 1.4e-05 -2.6e-05 2.1e-06  
8e-05 1.2e-05 -2.2e-05 1.8e-06  
4.3e-05 6.5e-06 -1.2e-05 9.8e-07  
covPlane:  
1.9e-05 -2.4e-13 4.4e-13 -3.5e-14  
-2.4e-13 -3.6e-14 6.7e-14 -5.4e-15  
4.4e-13 6.7e-14 -1.2e-13 1e-14  
-3.5e-14 -5.4e-15 1e-14 -8e-16  
covRXY:  
-5.3e+03 -4.6e+03 -2.5e+03  
-4.6e+03 -4.1e+03 -2.2e+03
```

-2.5e+03 -2.2e+03 -1.2e+03
 szFit() for 3 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 t, m: 0.17 +/- 0.39 / -0.22 +/- 0.064 Chi2: 0.18
 Layer: 0 hitInLayer: 0 hitID 0 Point (-1/-1/-1/1) -|- PndRiemannTrackFinder::CheckHitInTrack
 - Hit: 0 already in track!
 Layer: 6 hitInLayer: 0 hitID 3 Point (-1/-1/21/2/1) ZeroPassing!
 Layer: 6 hitInLayer: 1 hitID 4 Point (-1/-1/21/3/1) ZeroPassing!
 Layer: 6 hitInLayer: 2 hitID 7 Point (-1/-1/21/6/1) ZeroPassing!
 Layer: 6 hitInLayer: 3 hitID 9 Point (-1/-1/21/8/1) -|- PndRiemannTrackFinder::CheckHitInTrack
 - Hit: 9 already in track!
 Layer: 6 hitInLayer: 4 hitID 10 Point (-1/-1/21/9/1) Hits: 9 10 too close 0.49
 Layer: 7 hitInLayer: 0 hitID 2 Point (-1/-1/21/1/1) szChi2Fit(hit) for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Additional hit: 1.6 7
 t, m: 3.4 +/- 2.1 / 0.24 +/- 0.39 Chi2: 23
 : dist 0.82 szDist -7.2 szChi2 23
 dist larger than 0.05
 Layer: 9 hitInLayer: 0 hitID 5 Point (-1/-1/21/4/1) szChi2Fit(hit) for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Additional hit: 3.7 15
 t, m: 6.8 +/- 3.7 / 0.81 +/- 0.66 Chi2: 85
 : dist -0.31 szDist -16 szChi2 85
 dist larger than 0.05
 Layer: 9 hitInLayer: 1 hitID 8 Point (-1/-1/21/7/1) szChi2Fit(hit) for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Additional hit: -1.4 15
 t, m: 6.6 +/- 6.1 / 0.48 +/- 1.1 Chi2: 1.4e+02
 : dist -2.9 szDist -15 szChi2 1.4e+02
 dist larger than 0.05
 Layer: 12 hitInLayer: 0 hitID 6 Point (-1/-1/21/5/1) ZeroPassing!
 Layer: 14 hitInLayer: 0 hitID 1 Point (-1/-1/21/0/1) szChi2Fit(hit) for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Additional hit: 1.5 22
 t, m: 10 +/- 6.6 / 1.2 +/- 1.2 Chi2: 2.3e+02
 : dist 2.9 szDist -22 szChi2 2.3e+02
 dist larger than 0.05
 Layer: 15 hitInLayer: 0 hitID 12 Point (-1/-1/23/1/1) -|-
 PndRiemannTrackFinder::CheckHitInTrack - Hit: 12 already in track!
 Layer: 15 hitInLayer: 1 hitID 13 Point (-1/-1/23/2/1) szChi2Fit(hit) for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5

Point: 2: -9.4 2
 Additional hit: -9.4 3.4
 t, m: 0.067 +/- 0.61 / -0.28 +/- 0.086 Chi2: 0.9
 : dist 9e-16 szDist -1.1 szChi2 0.9
 -l- PndRiemannTrack::addHit 3: -4.5 8.3
 fweight: 5e+04
 fav: -3.4 6.3 57
 sampleCov:
 1.5e+04 -2.9e+04 -4.6e+05
 -2.9e+04 5.3e+04 8.5e+05
 -4.6e+05 8.5e+05 1.4e+07
 eigenVec:
 -0.034 -0.47 -0.88
 0.062 0.88 -0.47
 1 -0.071 1.4e-05
 eigenValues: 1.4e+07 1.2e+02 -1.7e-11
 fn: -0.88 -0.47 1.4e-05
 fc: 9.7e-13
 szFit() for 4 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 t, m: 0.067 +/- 0.61 / -0.28 +/- 0.086 Chi2: 0.9
 actHit added: 13 r: 3.6e+04 orig: 3.1e+04 1.7e+04
 Hits: 13 13 too close 0
 Hits: 13 15 too close 0.3
 Layer: 15 hitInLayer: 2 hitID 15 Point (-1/-1/23/4/1) szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -9.3 3.4
 t, m: 0.03 +/- 0.57 / -0.31 +/- 0.075 Chi2: 1.2
 : dist -0.29 szDist -0.65 szChi2 1.2
 dist larger than 0.05
 Layer: 15 hitInLayer: 3 hitID 16 Point (-1/-1/23/5/1) Hits: 12 16 too close 0.3
 Layer: 17 hitInLayer: 0 hitID 11 Point (-1/-1/23/0/1) szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -12 2.7
 t, m: 0.24 +/- 0.57 / -0.23 +/- 0.068 Chi2: 1.3
 : dist -0.37 szDist 0.9 szChi2 1.3
 dist larger than 0.05
 Layer: 17 hitInLayer: 1 hitID 14 Point (-1/-1/23/3/1) szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -12 4.5

t, m: -0.12 +/- 0.58 / -0.33 +/- 0.069Chi2: 1.4
 : dist -0.07 szDist -0.94 szChi2 1.4
 dist larger than 0.05
 Too Close Point 15: (-1/-1/23/4/1)szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -9.3 3.4
 t, m: 0.03 +/- 0.57 / -0.31 +/- 0.075Chi2: 1.2
 : dist -0.29 szDist -0.65 szChi2 1.2
 dist larger than 0.05
 Too Close Point 16: (-1/-1/23/5/1)szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -9.3 2
 t, m: 0.11 +/- 0.57 / -0.26 +/- 0.076Chi2: 1.2
 : dist -0.29 szDist 0.67 szChi2 1.2
 dist larger than 0.05
 Too Close Point 10: (-1/-1/21/9/1)szChi2Fit(hit) for 5 Points!
 Point: 0: 0 0
 Point: 1: -4.7 1.5
 Point: 2: -9.4 2
 Point: 3: -9.4 3.4
 Additional hit: -4.7 1.1
 t, m: -0.028 +/- 0.49 / -0.29 +/- 0.073Chi2: 0.99
 : dist -0.15 szDist 0.33 szChi2 0.99
 dist larger than 0.05
 fweight: 5e+04
 fav: -3.4 6.3 57
 sampleCov:
 1.5e+04 -2.9e+04 -4.6e+05
 -2.9e+04 5.3e+04 8.5e+05
 -4.6e+05 8.5e+05 1.4e+07
 eigenVec:
 -0.034 -0.47 -0.88
 0.062 0.88 -0.47
 1 -0.071 1.4e-05
 eigenValues: 1.4e+07 1.2e+02 -1.7e-11
 fn: -0.88 -0.47 1.4e-05
 fc: 9.7e-13
 CovNorm:
 -7.9e-15 1.5e-14 -1.2e-15
 1.5e-14 -2.7e-14 2.2e-15
 -1.2e-15 2.2e-15 -1.8e-16
 covAv:
 1.8e-05 0 -0.00013
 0 2.1e-06 2e-05
 -0.00013 2e-05 0.0012
 nCrn: 1.4e-05 rCnr: -3.5e-13 trCnCr: -2.2e-20

jacRXY:
-1 0 0 -2.6e+09
0 -3.6e+04 0 -2.3e+09
0 0 -3.6e+04 -1.2e+09
temp: 3x4
temp:
5.7e-06 3e-06 -5.6e-06 4.5e-07
1.8e-05 2.7e-06 -4.9e-06 4e-07
9.5e-06 1.4e-06 -2.7e-06 2.1e-07
covPlane:
1.4e-05 -5.3e-14 9.7e-14 -7.8e-15
-5.3e-14 -7.9e-15 1.5e-14 -1.2e-15
9.7e-14 1.5e-14 -2.7e-14 2.2e-15
-7.8e-15 -1.2e-15 2.2e-15 -1.8e-16
covRXY:
-1.2e+03 -1e+03 -5.5e+02
-1e+03 -9e+02 -4.8e+02
-5.5e+02 -4.8e+02 -2.6e+02
szFit() for 4 Points!
Point: 0: 0 0
Point: 1: -4.7 1.5
Point: 2: -9.4 2
Point: 3: -9.4 3.4
t, m: 0.067 +/- 0.61 / -0.28 +/- 0.086 Chi2: 0.9
Track added! 0 9 12 r: 3.6e+04 orig: 3.1e+04 1.7e+04 sz-m: -0.28 sz-t: 0.067 dip: 0.96
Hits in Track: 4
(-1/-1/-1/-1/1) (-1/-1/21/8/1) (-1/-1/23/1/1) (-1/-1/23/2/1) numHits: 4

*** Break *** floating point exception

Best regards

Andreas