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Subject: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Mon, 10 Mar 2014 17:52:58 GMT  
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Hello all

I am new to PANDARoot. I have installed the external packages of apr13 and the pandaroot from the website <https://subversion.gsi.de/fairroot/pandaroot/trunk> pandaroot. Everything is working very well. I have also tried to understand tutorial of apr13 given in [pandaroot/tutorial/apr13](#). which is also working well.

Now I want to do the simulation for x(3872) and using the master thesis Simulation of X(3872) Decays Using the PandaRoot Framework by Martin Johannes Galuska and I simply want to reproduce the data given in thesis and in paper Pos (Bormio2012) 018. Decay file is also ready. simulation file is also ready and to prepare the this file I have taken the help of tut\_sim.C file in apr13 tutorial. Now what are the modification needed for the invariant mass spectroscopy and missing mass and lastly the resonance scan. I know some the Physics of it but little bit weak in simulation. Please help me out.

Thank You

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Mon, 10 Mar 2014 18:09:16 GMT  
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Hello,

I can send you all the files, macros and bash scripts which I used to run the simulation and to analyse the simulated data. However, the simulation was performed with an older version of PandaRoot and since that time a lot has changed in the software framework. As I currently have a lot of urgent deadlines to meet, I cannot make the changes necessary to the aforementioned files for you, so you might need the help of someone who is already experienced in PandaRoot simulations to help you.

For the resonance scan I ran a simulation for the background from the direct process and for the signal for each of the 20 points using a bash script, but still some manual work is needed to get to the final plot.

Kind regards,  
Martin

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Tue, 11 Mar 2014 09:14:25 GMT  
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Hello

Thank you very much for your response.

I request you to send me the files I will try to modified it.

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Wed, 12 Mar 2014 00:23:21 GMT  
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Hello,

please send me your email address either as a reply here or as a private message. I will email you the files and my Master thesis which contains some documentation.

Kind regards,  
Martin

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Thu, 13 Mar 2014 02:31:52 GMT  
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Hello

My email address is [nakulphy@gmail.com](mailto:nakulphy@gmail.com)

Please send the required files to this email id.

Thank you

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Thu, 13 Mar 2014 11:10:12 GMT  
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Thank you. I will send you the files as soon as I have access to my backup harddisk which is in my office. As you know this week there is the PANDA CM taking place. Next week I will be at another conference, so it might take a couple of days until I can send you the files. Thank you for your patience.

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Fri, 14 Mar 2014 09:27:16 GMT  
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Thank you very much.

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018

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Posted by [MartinJGaluska](#) on Tue, 18 Mar 2014 19:30:09 GMT

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Hello,

I have just sent you the files you asked for.

Kind regards,  
Martin

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Tue, 25 Mar 2014 10:37:38 GMT

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Quote:

Hello Dr. Martin

I was trying to run the run\_sim\_tpcorsttcombi.C but I am facing some problem it it.

in detector setup the file tpc.geo is not available in pandaroot/geometry in jan14 pandaroot with revision 24201.

therefore I tried to modified it but I may be wrong in it. The simulation is running but gives some error and that I am sending it to you with the file name "tpc". I am also sending you the another error in the file "root tpc".

I am also sending your simulation file where I have changed the detector and also the root file that is generated in the simulation.

Please help me out..

Thank you

Hello Nakul,

please use the forum for support requests as I am very busy currently and other people will be able to help you as well.

As I have written earlier, there have been many changes in the software since I did the X(3872) analysis. One of these changes is that the TPC option was decided against and therefore, this detector geometry is not included in PandaRoot anymore.

I suggest to use the macros from \$VMCWORKDIR/macro/run as a basis for your files. You could do a diff of the macros I sent you with the macros in macro/run from the PandaRoot svn revision I used for my analysis (I quoted that number at some point in my Master thesis) to get an idea of the code I added to the standard macros and then you can apply similar changes to the current version of the macros in the PandaRoot revision you are using right now.

Kind regards,  
Martin

PS: I do not have a Dr. title.

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Fri, 28 Mar 2014 08:28:26 GMT  
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hello

I have tried to do as you suggested and I am sending you things which I got. the simulation and digi works but there is some problem with the reco. I am sending you the reco error.

```
nakul@linux-kqx4:~/pandaroot/x3872/x3872> root run_reco_tpcorsttcombi.C
```

```
*****  
*                               *  
*   W E L C O M E to R O O T   *  
*                               *  
* Version  5.34/05  14 February 2013 *  
*                               *  
* You are welcome to visit our Web site *  
*   http://root.cern.ch           *  
*                               *  
*****
```

```
ROOT 5.34/05 (tags/v5-34-05@48582, Oct 03 2013, 16:35:25 on linuxx8664gcc)
```

```
CINT/ROOT C/C++ Interpreter version 5.18.00, July 2, 2010
```

```
Type ? for help. Commands must be C++ statements.
```

```
Enclose multiple statements between { }.
```

```
root [0]
```

```
Processing run_reco_tpcorsttcombi.C...
```

```
Error in <TClonesArray::SetClass>: called with a null pointer
```

```
FairRootManager::OpenOutFile("reco_sttcombi.root")
```

```
Use detector with STT setup.???
```

```
Info in (PndGeoHandling::Instance): Making a new instance using the framework.
```

```
[INFO ] The input consists out of the following trees and files:
```

```
[INFO ] - cbmsim
```

```
[INFO ]   - digi_sttcombi.root
```

```
[INFO ] - FriendTree_1
```

```
[INFO ]   - points_sttcombi.root
```

```
[INFO ] Parameter and input file are available, Assure that basic info is there for the run!
```

```
[INFO ] The number of entries in chain is 10
```

```
*****
```

```
initialisation for run id 1396013441
```

```
*****
```

```
-l- FairRunTimeDB::InitContainer() FairBaseParSet
```

```
Info in <TGeoManager::CloseGeometry>: Geometry loaded from file...
```

```
Info in <TGeoManager::SetTopVolume>: Top volume is cave. Master volume is cave
```

```
Info in <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100
```

Info in <TGeoManager::Voxelize>: Voxelizing...  
Info in <TGeoManager::CountLevels>: max level = 12, max placements = 4550  
Info in <TGeoManager::CloseGeometry>: 2003695 nodes/ 5810 volume UID's in FAIR geometry  
Info in <TGeoManager::CloseGeometry>: -----modeler ready-----  
Container FairBaseParSet initialized from ROOT file.  
-l container name PndGeoSttPar  
-l container name PndGeoFtsPar

\*\*\*\*\*

initialisation for run id 1396013441

\*\*\*\*\*

-l- FairRunTimeDB::InitContainer() FairBaseParSet  
-l- FairRunTimeDB::InitContainer() PndSensorNamePar  
Container PndSensorNamePar initialized from ROOT file.  
-l- FairRunTimeDB::InitContainer() PndGeoSttPar  
Container PndGeoSttPar initialized from ROOT file.  
-l- FairRunTimeDB::InitContainer() PndGemDetectors  
Gem\_Disk1\_Gem1\_Sensor\_GEMmixture type 0 has 786 front and 4250 back channels  
Gem\_Disk1\_Gem6\_Sensor\_GEMmixture type 2 has 4750 front and 9000 back channels  
Gem\_Disk2\_Gem1\_Sensor\_GEMmixture type 0 has 786 front and 5350 back channels  
Gem\_Disk2\_Gem6\_Sensor\_GEMmixture type 2 has 5850 front and 11200 back channels  
Gem\_Disk3\_Gem1\_Sensor\_GEMmixture type 0 has 786 front and 7150 back channels  
Gem\_Disk3\_Gem6\_Sensor\_GEMmixture type 2 has 7650 front and 14800 back channels  
PndGemDetectors initialized from Ascii file  
-l- FairRunTimeDB::InitContainer() PndGeoFtsPar  
Container PndGeoFtsPar initialized from ROOT file.  
PndFieldCreator::SetParm() 0x880db90

\*\*\*\*\*

initialisation for run id 1396013441

\*\*\*\*\*

-l- FairRunTimeDB::InitContainer() FairBaseParSet  
-l- FairRunTimeDB::InitContainer() PndSensorNamePar  
-l- FairRunTimeDB::InitContainer() PndGeoSttPar  
-l- FairRunTimeDB::InitContainer() PndGemDetectors  
PndGemDetectors initialized from Ascii file  
-l- FairRunTimeDB::InitContainer() PndGeoFtsPar  
-l- FairRunTimeDB::InitContainer() PndMultiFieldPar  
Container PndMultiFieldPar initialized from ROOT file.  
OBJ: PndTransPar PndTransPar Trans. Field parameter container  
OBJ: PndDipole1Par PndDipole1Par Dipole Field parameter container  
OBJ: PndDipole2Par PndDipole2Par Dipole Field parameter container  
OBJ: PndSolenoid1Par PndSolenoid1Par Solenoid 1st region parameter container  
OBJ: PndSolenoid2Par PndSolenoid2Par Solenoid 2nd region parameter container  
OBJ: PndSolenoid3Par PndSolenoid3Par Solenoid 3rd region parameter container  
OBJ: PndSolenoid4Par PndSolenoid4Par Solenoid 4th region parameter container  
[INFO ] PndFieldMap: Reading field map from ROOT file  
/home/nakul/pandaroot/jan14/input/TransMap.0890.root  
[INFO ] PndFieldMap: Reading field map from ROOT file  
/home/nakul/pandaroot/jan14/input/DipoleMap1.0890.root  
[INFO ] PndFieldMap: Reading field map from ROOT file

```
/home/nakul/pandaroot/jan14/input/DipoleMap2.0890.root
[INFO ] PndFieldMap: Reading field map from ROOT file
/home/nakul/pandaroot/jan14/input/SolenoidMap1.root
[INFO ] PndFieldMap: Reading field map from ROOT file
/home/nakul/pandaroot/jan14/input/SolenoidMap2.root
[INFO ] PndFieldMap: Reading field map from ROOT file
/home/nakul/pandaroot/jan14/input/SolenoidMap3.root
[INFO ] PndFieldMap: Reading field map from ROOT file
/home/nakul/pandaroot/jan14/input/SolenoidMap4.root
-----FairGeane::Init ()-----
Loading Geant3 libraries ...
Loading Geant3 libraries ... finished
```

MZSTOR. ZEBRA table base TAB(0) in /MZCC/ at adr 255514687 F3AD83F HEX

MZSTOR. Initialize Store 0 in /GCBANK/  
with Store/Table at absolute adrs 255623941 255514687  
HEX F3C8305 F3AD83F  
HEX 1AB2A 0  
relative adrs 109354 0  
with 1 Str. in 2 Links in 5300 Low words in 4999970 words.  
This store has a fence of 16 words.

MZLOGL. Set Log Level 0 for store 0  
1\*\*\*\*\* GEANT Version 3.21/11 Released on 100298  
0\*\*\*\*\* Correction Cradle Version 0.1100

MZDIV. Initialize Division Constant in Store 0  
NW/NWMAX= 20004000000, MODE/KIND= 1 2  
Division 20 initialized.

MZLINK. Initialize Link Area /GCLINK/ for Store 0 NL/NS= 20 20

MZLINK. Initialize Link Area /GCSLNK/ for Store 0 NL/NS= 100 100  
-I- G3Config: Geant3 with TGeo has been created for Geane.  
-I- Geane.C: NOPRNT flag set to 1  
-I- Geane.C: IERR flags are not printed. If you want to switch them on, please set  
fErtrio1->noprnt = 0 in Geane.C  
Energy straggling area parameter from user set to: 0.999

Calculating cross section tables, see gphysi.dat for more information

Cross section calculation concluded successfully  
I- FairGeane::FairGeane: Geane is Initialized  
-W- PndMvdRiemannTrackFinderTask::Init: No Branch Names given with  
AddHitBranch(TString branchName)! Standard BranchNames taken!  
-I- PndMvdRiemannTrackFinderTask: Initialisation successfull  
-I- -----  
-I- PndSttMvdGemTracking: using branches MVDHitsPixel MVDHitsStrip STTHit GEMHit  
-I- to change one or more of these use PndSttMvdGemTracking:SetBranchName( TStrings );  
the order of TStrings is mvd pixel name, mvd strip name, stt name, gem name  
starting track for extrapolation SttMvdTrack SttMvdTrackCand

```

-|- -----
[INFO ] Branch: SttMvdTrackCand not found in Tree
[INFO ] Branch: SttMvdTrackCand not found in Tree
fStartTrackCandBranchName SttMvdTrackCand not found
Error in <PndSttMvdGemTracking::PndSttMvdGemTracking::Init>: stt + mvd trackcand - array
not found!
-|- PndMCTrackAssociator::Init
[INFO ] Branch: SttMvdGemTrack not found in Tree
[INFO ] Branch: SttMvdGemTrack not found in Tree
-|- PndMCTrackAssociator::Init: No PndTrack array!
-|- PndRecoKalmanTask::Init :: Using GeaneTrackRep
#####Mapper:filltubearray#####
fGeoType=1
*** PndRecoKalmanFit::Init MVDHitsStrip array found
*** PndRecoKalmanFit::Init MVDHitsPixel array found
[INFO ] Branch: SttHelixHit not found in Tree
[INFO ] Branch: SttHelixHit not found in Tree
*** PndRecoKalmanFit::Init SttHit array found
*** PndRecoKalmanFit::Init GEMHit array found
*** PndRecoKalmanFit::Init MdtHit array found
*** PndRecoKalmanFit::Init FtsHit array found
===PndRecoKalmanFit::Init() finished
=====
[INFO ] Branch: SttMvdGemTrack not found in Tree
[INFO ] Branch: SttMvdGemTrack not found in Tree
Error in <PndRecoKalmanTask::PndRecoKalmanTask::Init>: track-array not found!
-|- PndMCTrackAssociator::Init
[INFO ] Branch: SttMvdGemGenTrack not found in Tree
[INFO ] Branch: SttMvdGemGenTrack not found in Tree
-|- PndMCTrackAssociator::Init: No PndTrack array!
[INFO ] The number of entries in chain is 10
terminate called after throwing an instance of 'std::out_of_range'
 what(): vector::_M_range_check
nakul@linux-kqx4:~/pandaroot/x3872/x3872>

```

thank you

---

Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
 Posted by [Stefano Spataro](#) on Fri, 28 Mar 2014 08:36:44 GMT  
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Again,  
 please use the macros in macro/run, or the ones in the tutorial.  
 You need only to change the simulation macro sim\_complete, setting your .dec file and the  
 beam momentum. Apart from this, the rest should stay untouched, digi\_complete  
 reco\_complete and pid\_complete.  
 After pid, you can run your analysis macro as Martin did, even if I suppose you need to modify  
 something. ana\_complete is a good example, but you need to modify it maybe for your  
 purposes.



The macros you are using are somehow obsolete, you use tasks which are not used anymore and they could have bugs making everything crash,

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018

Posted by [nakulphy](#) on Fri, 28 Mar 2014 08:55:09 GMT

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---

Thank you very much.

yes its work. actually that old files were also working with some small modifications. that is why I was using that files.

macro/run is now working properly

In sim, didi, rec, and pid\_complete.C is now working properly and now I am focusing on the analysis file. but how to check that our simulations going on way that we are expecting ? in all the simulations at the end it gives the message "Test passed All ok". but how to verify this ?

during simulation the message comes

```
**** GTRIGI: IEVENT= 4 IDEVT= 4 Random Seeds = 123456 0
[INFO ] FairPrimaryGenerator: (Event 4) 6 primary tracks from vertex (-0.071961, 0.202136,
0.100250 ) with beam gradient (0.000000, 0.000000) Event Time = 0.000000 (ns)
POINT EXECUTION *****
```

in which what is the meaning of beam gradient (,) ?

Thank you

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018

Posted by [MartinJGaluska](#) on Fri, 28 Mar 2014 08:56:58 GMT

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Yes, Stefano is right. I have not changed the digitization, reconstruction or pid macros. I only added some custom code in the simulation macro which you need to more or less copy over to the current version of the simulation macro from macro/run. The analysis macro will probably have to be rewritten due to many changes. The shell scripts should work fine with no or only minor adjustments.

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018

Posted by [nakulphy](#) on Fri, 28 Mar 2014 09:12:51 GMT

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yes sir I was trying to do the both older and the macro/run.

and there is no any problem in macro/run it is working properly. But how to check that our simulation is going as our expectations. and how to check the status of the ongoing simulations



???

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Fri, 28 Mar 2014 09:40:14 GMT  
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Sorry, I don't understand your question.

---

Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Fri, 28 Mar 2014 09:49:09 GMT  
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the root files that are created during the simulations such as sim\_complete.root, simparams.root, etc...  
how to study these files ? and what is the meaning of beam gradient which is created during the sim\_complete.C ? which is given below.

```
**** GTRIGI: IEVENT= 9 IDEVT= 9 Random Seeds = 123456 0
[INFO ] FairPrimaryGenerator: (Event 9) 8 primary tracks from vertex (-0.189898, 0.091527,
0.224391 ) with beam gradient (0.000000, 0.000000) Event Time = 0.000000 (ns)
POINT EXECUTION *****
```

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [Ralf Kliemt](#) on Fri, 28 Mar 2014 09:59:46 GMT  
[View Forum Message](#) <> [Reply to Message](#)

Hello nakulphy,

nakulphy wrote on Fri, 28 March 2014 10:49 the root files that are created during the simulations such as sim\_complete.root, simparams.root, etc...  
how to study these files ?

What do you want to study? Is it detector performance of the individual subsystems? Then you will have to dig into the sim, reco and pid files.

Is it particle physics, i.e. studying the detected results of a specific event generator input (e.g. "your" channel), then you don't need to worry about those files and go on with analysis.

nakulphy wrote on Fri, 28 March 2014 10:49 and what is the meaning of beam gradient which is created during the sim\_complete.C ? which is given below.

```
**** GTRIGI: IEVENT= 9 IDEVT= 9 Random Seeds = 123456 0
[INFO ] FairPrimaryGenerator: (Event 9) 8 primary tracks from vertex (-0.189898, 0.091527,
0.224391 ) with beam gradient (0.000000, 0.000000) Event Time = 0.000000 (ns)
POINT EXECUTION *****
```

This is output of the framework (event generator interface) during simulation. We don't use sophisticated beam properties, yet, so it's nothing to worry about.

Cheers

Ralf Kliemt

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Fri, 28 Mar 2014 10:20:25 GMT  
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Thank you very much....

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Mon, 21 Apr 2014 09:13:27 GMT  
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---

Hello

simulation, digitization, reconstruction, particle identification (from macro/run) is completed and the calculation of no of event is also completed and for this calculations we have used Mathematica 9.

now the analysis part is left. what is the method that we have to follow ?

Thank you

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [MartinJGaluska](#) on Mon, 21 Apr 2014 20:48:52 GMT  
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Hello,

I have not written many analysis macros recently, but I assume that the hint Stefano gave you in his post from March, 28th is still valid.

Quote:

ana\_complete is a good example, but you need to modify it maybe for your purposes.

You can find the file in macro/run of your PandaRoot source folder or here. You can use it as an example of how to write an analysis macro. For the analysis strategy you can follow the analysis macro which I sent you in the email some time ago. The file is called run\_ana\_tpcorsttcombi.C, but don't expect the code to work without (numerous) modifications. There were lots of changes to the analysis framework after I wrote the code. I suggest to take advantage of the new PID functionality just to mention one thing that comes to mind.

Kind regards,  
Martin

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Subject: Re: Reproduce the result of Pos (Bormio2012) 018  
Posted by [nakulphy](#) on Tue, 22 Apr 2014 02:46:47 GMT  
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Hello

Thank you. I am using the same macro.

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