

Minutes from the hyperon meeting Tuesday April 14th

Participants: Albrecht Gillitzer (Jülich), André Goerres (J), Jennifer Puetz (J), Dariusch Deermann (J), Michael Papenbrock (Uppsala), Walter Ikegami Andersson (U), Lia Lavezzi (Torino), Solmaz Vejdani (Groningen), Karin Schönning (U).

1. Talk by Dariusch Deermann on Λ_c production. He has performed a simulation study at beam momentum of 10.2 GeV using ideal pattern recognition but with extra requirement for each track to have at least 3 hits in the same sub-detector, in order to mimic probable effects imposed by real pattern recognition. The efficiency of the exclusive $\Lambda_{\text{cbar}}\Lambda_c$ channel is low, and this fact in combination with the low BR ($\sim 1\%$) motivates a focus of the inclusive channel $\Lambda_{\text{cbar}}X$ and $X\Lambda_c$, identifying the untagged hyperon by missing kinematics. Dariusch will prepare an analysis note to release his results according to the new rules, so that the results can be shown to the public.

The slides of the talk can be found here:

https://panda-wiki.gsi.de/foswiki/pub/Physics/Baryons/Meeting14Apr2015/2015_04_14_Lambda_c.pdf

2. Strategy for future simulation studies: There was a discussion on where the focus should be in the future.

Firstly, more feasibility studies are needed, especially on the spectroscopy side where only one channel ($\Xi \Xi_{\text{bar}} \pi^0$) is presented in the PANDA Physics Book.

Secondly, most of the official results on spin observables in hyperon production, are performed with the old, simplified PANDA software framework Pandora. The old results therefore needs validation with PANDAROOT. Some preliminary results were obtained during the scrutiny campaign (showing a rough agreement) but in order to make these results official, a lot more work is needed. This is currently on hold since it anyway would have to be re-validated when the pattern recognition code is adapted to handle hyperons.

Thirdly, quality assurance and other tests, providing input for the core developers working on (mainly) pattern recognition, are needed and can be done within the scope of a simulation study by a Ph.D. Student. Tobias Stockmanns and Lia Lavezzi are currently working on preparing the quality assurance tasks and will present them soon. Lia also pointed out that it would be valuable with more tests of how the primary track finder in Pandaroot (i.e. the default code) performs for different hyperon channels. Some studies have been made for $\Lambda\Lambda_{\text{bar}}$ at 1.64 GeV and 4 GeV but studies of other channels would also be welcome. Other tests, for example how many hits a given track gives in different subdetectors, are also important and quite straight-forward to perform.

3. The future of PANDA: We discussed how we can convince the outside world about the discovery potential and the uniqueness of PANDA in the field of hyperon/baryon physics. As a starting point the ambition is to make a write-up on our research programme, including the low-luminosity as well as the high-luminosity case. A lot were learned during the scrutiny campaign which will be useful here, as will the recent and on-going simulation studies by D. Deermann and A. Goerres. Albrecht Gillitzer and Karin Schönning will discuss this in more detail and keep you updated.

We also have an ambition that some aspect of hyperon physics is covered in the physics plenary session at the collaboration meetings. At the next meeting in Uppsala, we have asked for a time slot for Carlos Granados to give a talk on hyperon transition form factors.