Subject: Phase Shifter Meeting
Date: Wed, 05 May 2004 11:04:01 -0500
From: Terechkine <terechki@fnal.gov>
To: "G. William Foster" <gwf@fnal.gov>
CC: Ralph Pasquinelli <pasquin@fnal.gov>, Nikolay Solyak <solyak@fnal.gov>,
Brian Chase <chase@fnal.gov>, Markus Huening <mhuening@fnal.gov>,
Bob Kephart <Kephart@fnal.gov>, "C. Shekhar Mishra" <mishra@fnal.gov>,
Al Moretti <moretti@fnal.gov>, Dave Wildman <wildman@fnal.gov>,
Ding Sun <ding@fnal.gov>, Vladimir Kashikhin <kash@fnal.gov>,
Steve Hays <slh@fnal.gov>, Pierre Bauer <pbauer@fnal.gov>,
Roger Dixon <roger@fnal.gov>, steve holmes <holmes@fnal.gov>,
Eric Prebys <prebys@fnal.gov>, Weiren Chou <chou@fnal.gov>,
Ioanis Kourbanis <ioanis@fnal.gov>, Milorad Popovic <popovic@fnal.gov>,
Howard Pfeffer <pfeffer@fnal.gov>, John Reid <jsreid@fnal.gov>,
Victor Yarba <yarba@fnal.gov>, Giorgio Apollinari <apollina@fnal.gov>,
Leo Bellantoni <bellanto@fnal.gov>, Gennady Romanov <gromanov@fnal.gov>,
Jim Kerby <kerby@fnal.gov>, "Elliott S. McCrory" <mccrory@fnal.gov>,
Jim Strait <strait@fnal.gov>, Bob Webber <webber@fnal.gov>,
sergei nagaitsev <nsergei@fnal.gov>, Helen Edwards <hedwards@fnal.gov>,
Timergali Khabibouline <khabibul@fnal.gov>, Ivan Gonin <gonin@fnal.gov>,
Bob Kustom <rlk@aps.anl.gov>, jim maclachlan <maclachlan@fnal.gov>,
Jean-Francois Ostiguy <ostiguy@fnal.gov>, Dave Finley <finley@fnal.gov>,
Tim Berenc <berenc@fnal.gov>, Mike Foley <foleymh@fnal.gov>,
Allan Rowe <arowe@fnal.gov>, Dan Wolff <wolff@fnal.gov>,
Chris Jensen <ccjensen@fnal.gov>, Peter Prieto <prieto@fnal.gov>,
Iouri Terechkine <terechki@fnal.gov>

Hello.
Several of us (John, Ding, Steve, Timer, and Yuri) have met yesterday to discuss how to start low level measurements for the coax and w/g shifters.

Here is a brief summary of what we've agreed upon.

1. W/G shifter.
Sample ferrite pieces should come in a week or so.
There is magnetic system in IB2 that requires little work to be adjusted to our need. There is an agreement that this work can be done by Luciano Elementi of TD.
Ther is another magnet in TD storage area that can be used. It requires 500 A 10 V power source to meet our needs. Steve Hays will try to find an appropriate (compact) power supply to use with the magnet. If he does, the second magnet option sounds more attractive (at least for me) because we can set it in more comfortable place and use forever. The power supply is needed in any case when we switch to high power test.
Ding and John will take a look at a waveguide and w/g-to-coax transition.
A simple sketch of the end of the magnet in IB-2 is attached (jpeg)

2. Coaxial shifter
Ferrite for magnetis system is ordered, and deliveruy time is 6 weeks.
YIG toroids were ordered much earliar, so in pronciple we can start low power test sooner than in 6 weeks
We can use a solenoid to make a low power test.
Iit will be necessary to find a solenoid appropriate for the test:
- bore more than about 3.5"
- field is more than 2000 Gs

- length is more that bout 12"
Please, send your suggestions if you know a solenoid like this

Last week Dave was going to order the coaxial hardware, I hope the order has been placed.

Although the configuration suggested by Temir looks attractive, the low power test must be done first with the YIG ferrite ordered by Dave. Then the toroids can be modified to larger inner diameter.
Some design work is needed here first. Ding has agreed to start this activity.

The main issue when switching to high power test is going to be good thermal contact of YIG ferrite with walls. It is true to both w/g and coax vesions, although for coaxial version the problem is more severe dure to possible high electrical field in gaps.
A technique must be chosen to make this contact.

There were more discussions around high power tests, but we need to reiterate it later to converge on the way how we do the test.

Thanks
Yuri