BornAgain - Feature #2417

Polarized: support z-component of magnetic field

20 Nov 2019 12:47 - dmitry

Status:	Backlog	**Start date:**	20 Nov 2019
Priority:	Normal	**Due date:**	
Assignee:		**% Done:**	0%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

As described in section 1.1 of this internal report,
external magnetic field is subtracted during the computation of the wave reflected from magnetized sample.
In the section 1.2 of the same document it is stated, that z-component of the magnetic field (that is, the one normal to the sample surface)
must be constant across the sample.

As the result, z-component of magnetic field, B_z, is always nullified during the computation.
It would be useful to check how it is treated in other codes.
For example, GenX considers only the angle between beam polarization and the direction of the magnetic field, thus avoiding direct treatment of z-component.
This approach however does not allow for not fully polarized beams and imperfect analyzers.

Anyhow, B_z nullifying has a counter-intuitive behavior, since a user can specify any B_z in the layers,
but it will not affect the result of computation.

Related issues:

Related to BornAgain - Envelope task #2419: Polarized - summary of tasks	**In Progress**

History

#1 - 20 Nov 2019 13:52 - dmitry

- Status changed from New to Backlog

#2 - 20 Nov 2019 13:58 - dmitry

- Related to Envelope task #2419: Polarized - summary of tasks added

#3 - 29 Jun 2020 10:03 - rbeerwerth

The z-component is mostly irrelevant for reflectometry, according to Artur.
For this reasons we should in first instance consider to restrict the magnetization to be in-plane, this pretty much spares us from this issue for the moment.
I will also discuss this issue with Jülich sometimes, but would not put it very high on the agenda yet.

#4 - 18 Sep 2020 23:23 - wuttke

- Subject changed from Handling z-component of magnetic field to Core: polarized: support z-component of magnetic field

#5 - 19 Sep 2020 09:08 - wuttke

- Subject changed from Core: polarized: support z-component of magnetic field to Polarized: support z-component of magnetic field