Group Meeting #2

Date: Wednesday 8-5-2019. (5:30 to 6:30 PM)

Location: Chair of Computational Mechanics (Room: N2620)

In attendance: Ani Khaloian, Michael Richter (Project supervisors)

Ammar Khallouf, Gavallas Panagiotis, Yasuyuki Shimizu (Group members)

1. Review of Progress made since last meeting:

Group members have presented to the supervisors the work achieved with regard to the assigned tasks from last meeting in March, this include review and comparison of the current failure criteria for composite material in literature. In addition, the ABAQUS exercise results for the tensile test model were briefly presented to the supervisors.

Feedback from supervisors: the presented literature and the ABAQUS model finding to be incorporated in the presentation slides for the 1st Review assessment.

2. Handover of the basic 3D user defined material model:

The supervisors have handed in the basic material model to the group members, the material model was developed by software lab group from last year. The supervisors went briefly through the code structure of the material written in FORTRAN.

Task from supervisors: the group members need to go through the definition scheme for the user-defined material subroutine in ABAQUS, establish the link between FORTRAN compiler and ABAQUS, suggest some improvements for the provided code, test implementation of the user defined material in ABAQUS.

3. Discussion of the 1st review presentation on 21st May 2019:

The group members discussed their plan for meeting the deadline of 1st review presentation, which is to be submitted on 18th May 2019, the group members enquired from the supervisors about the scope of the presentation and the required material to be presented.

Feedback from supervisors: the supervisors suggested for the first presentation to include the literature review done with respect to mechanics of composite materials including motivation for

the importance of such materials for industrial applications, their anisotropic behavior, the importance of understanding their failure behavior and damage characteristic for future developments of the field, summarizing the current available criteria in literature and providing a simple comparison between them, discussing the limitations of current material models in ABAQUS and the essential need for developing user-defined materials in FE schemes for the simulation of advanced engineering problems.

The supervisors have stressed the importance of highlighting the programming aspect of the project represented in developing a user defined material which requires deep understanding of the composite material mechanics prior to the development of actual code and its implementation. However, the produced models after such development are highly superior compared to the basic models in ABAQUS. The supervisors stressed the importance of providing a timeline for the future work to be done on the project.

The supervisors also offered to provide feedback on a draft version of the presentation, given that it is submitted in a reasonable time prior to the deadline.

4. Next Meeting:

The next meeting with the supervisors will take place on 12th June 2019.