

**STATEMENT OF THE ADVISOR**  
**(VYJÁDRĚNÍ ŠKOLITELE)**

I've known **Serap Şahinkaya** since the time of her undergraduate studies. I met her during my brief stay at GIT in Turkey in June/July 2009, and she also attended some of my courses and seminars at MFF UK during her Erasmus stay in Prague in 2010/11.

Serap started her PhD. under my supervision in October 2011. She had the advantage of having a good working knowledge of classic algebra, notably module theory, but also the disadvantage of having passed few courses in more abstract parts of mathematics, such as category theory, homological algebra and set-theory. This has influenced her research: while she did not participate in the major recent work of our group classifying tilting and cotilting classes over all commutative noetherian rings (in a joint paper by Angeleri, Pospíšil, Šťovíček and myself, to appear in *Trans. Amer. Math. Soc.*), she was able to employ that classification as well as the Bazzoni-Xu method of colocalization in order to compare cotilting  $R$ -modules over commutative noetherian rings  $R$  with cotilting  $R_{\mathfrak{m}}$ -modules where  $\mathfrak{m}$  ranges over the maximal spectrum of  $R$ . These results have recently appeared in our joint paper in *J. Algebra* 408(2014), and form the basis of Chapter 2 of Serap's PhD Dissertation.

Cotilting modules generalize the injective ones, the main point being that cotilting theory still fits well in the approximation theory of modules. This fact inspired Serap to ask for the relations of other, more classic, generalizations of injectivity to approximations. In our recent joint work (still to be put in the final preprint form), we have answered this question and proved the following: unlike cotilting modules, these classic generalizations (CS-, C2-, quasi-injective, continuous, etc. modules) fit the approximation theory only rarely, essentially when they 'have to', that is, when they coincide with the injective or pure-injective modules. These rather general negative results may appear surprising at first sight. They form the basis of Chapter 3 of Serap's PhD Dissertation.

In my opinion both Chapters 2 and 3 of the Dissertation present interesting new research. Therefore, I have no doubt that Serap Şahinkaya deserves her PhD degree from MFF UK.

Prague, May 27, 2014

Prof. RNDr. Jan Trlifaj, DSc. (advisor)

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