MINISYMPOSIUM 7: Optimized Schwarz Methods: Promises and Challenges

Lahcen Laayouni

School of Science and Engineering, Al Akhawayn University, B.P. 1890, Avenue Hassan II, Ifrane 53000- Morocco. L.Laayouni@aui.ma

In the last two decades, many investigations have been devoted to improve the performance of the classical Schwarz methods. Optimized Schwarz methods (OSM) are one of the competitive candidates among other modern domain decomposition methods. OSM had significantly enhance the performance of the classical Schwarz methods. Those improvements are based essentially on using different type of transmission conditions between subdomains. The key idea is to exchange more information between subdomains which corresponds to communicate solutions and theirs derivatives instead of exchanging solutions only. Rigorous Fourier analysis for different decompositions and different differential equations had shown the efficiency and robustness of OSM as promised. Now, the big challenges are to extend the performances of optimized Schwarz methods to consider high dimensional differential equations and systems of PDE's with complicated geometries. In this minisymposium we give some answers to different aspects of those challenges.