Solving 3D frictional contact problems: Formulations and comparisons of numerical methods.

RESEARCH

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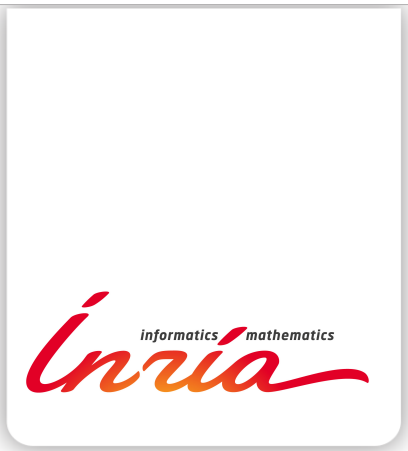

Solving 3D frictional contact problems: Formulations and comparisons of numerical methods.

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Research Report n° 123456789 — September 5, 2017 — 104 pages

Abstract: TBW

Key-words: Multibody systems, nonsmooth Mechanics, unilateral constraints, Coulomb friction, impact, numerical methods

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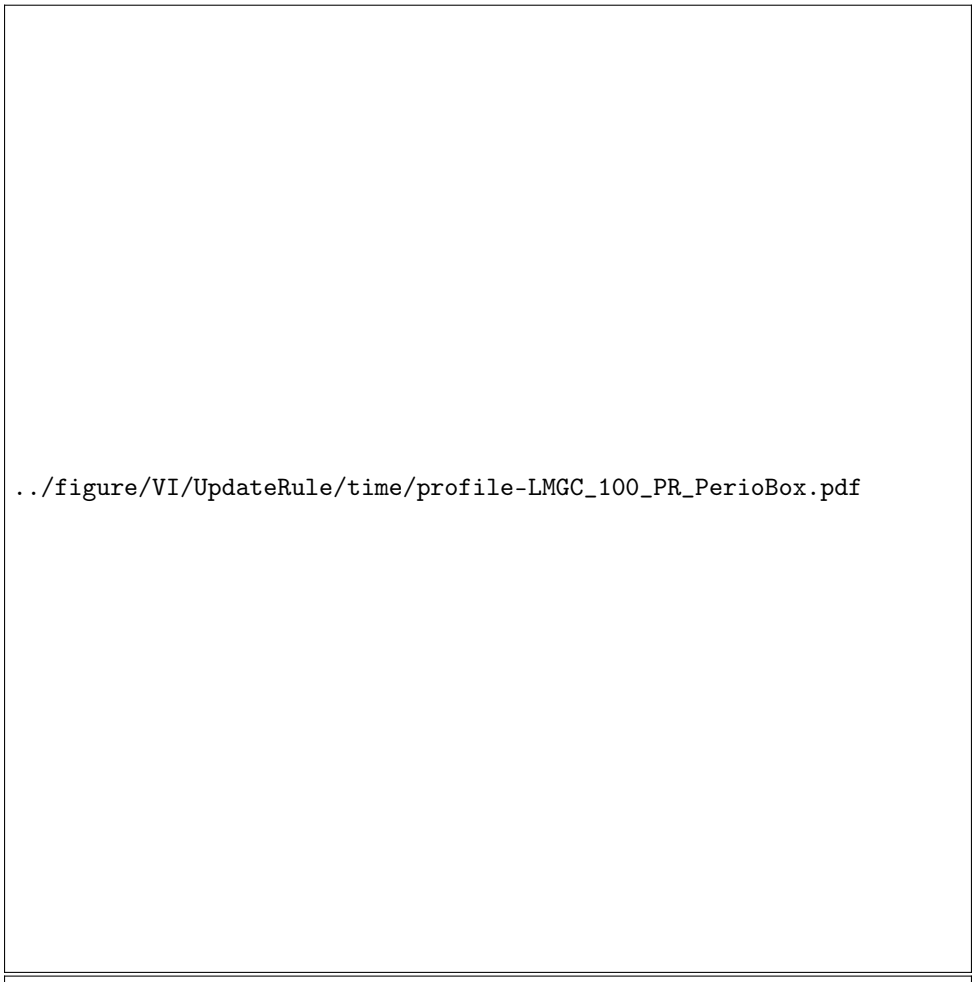
Sur la résolution du problème de frottement tridimensionnel. Formulations and comparaisons des méthodes numériques.

Résumé : TBW

Mots-clés : Systèmes multi–corps, Mécanique non régulière, contraintes unilatérales, frottement de Coulomb, impact, Schémas numériques de résolution

Contents

1 LMGC_100_PR_PerioBox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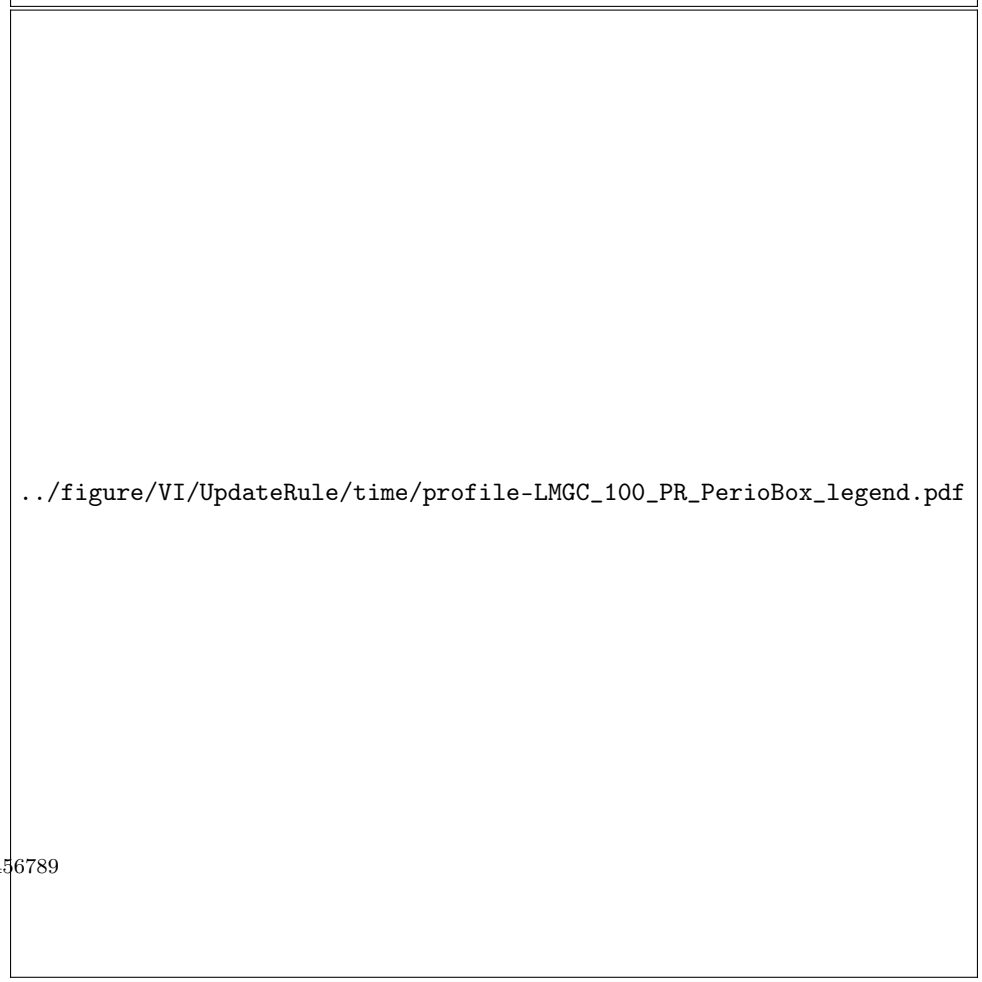
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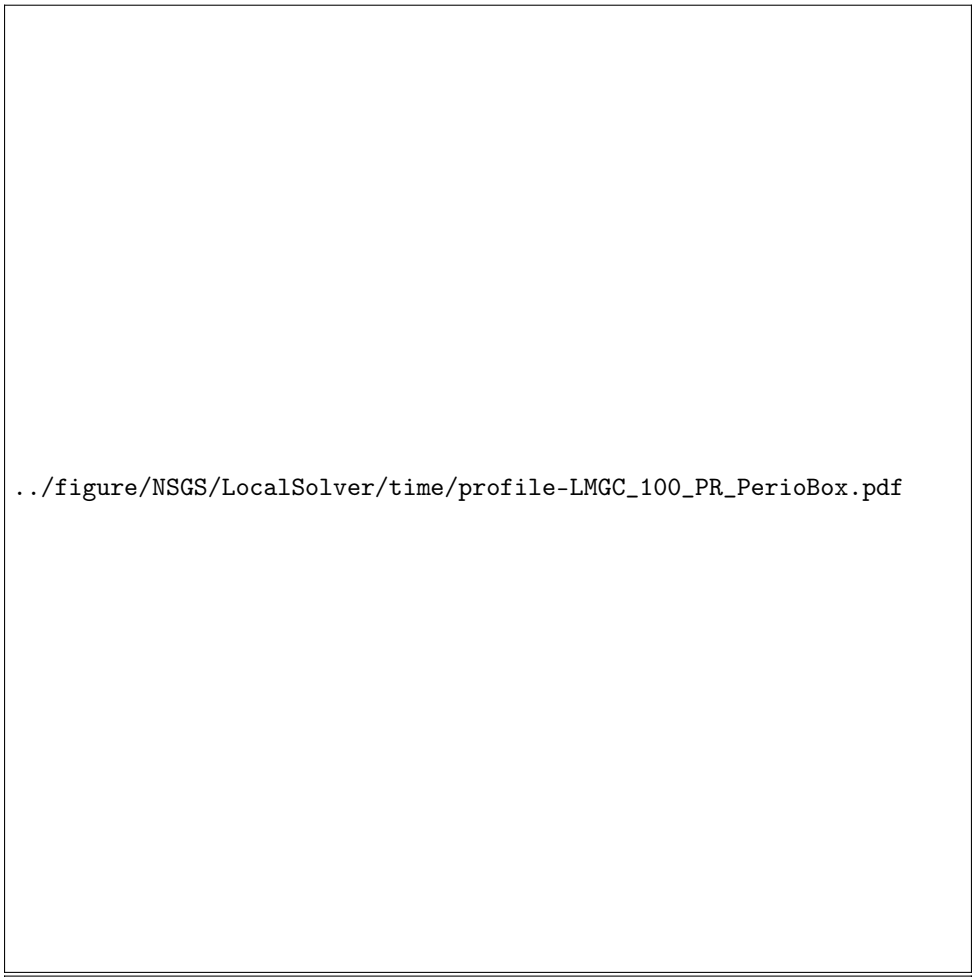
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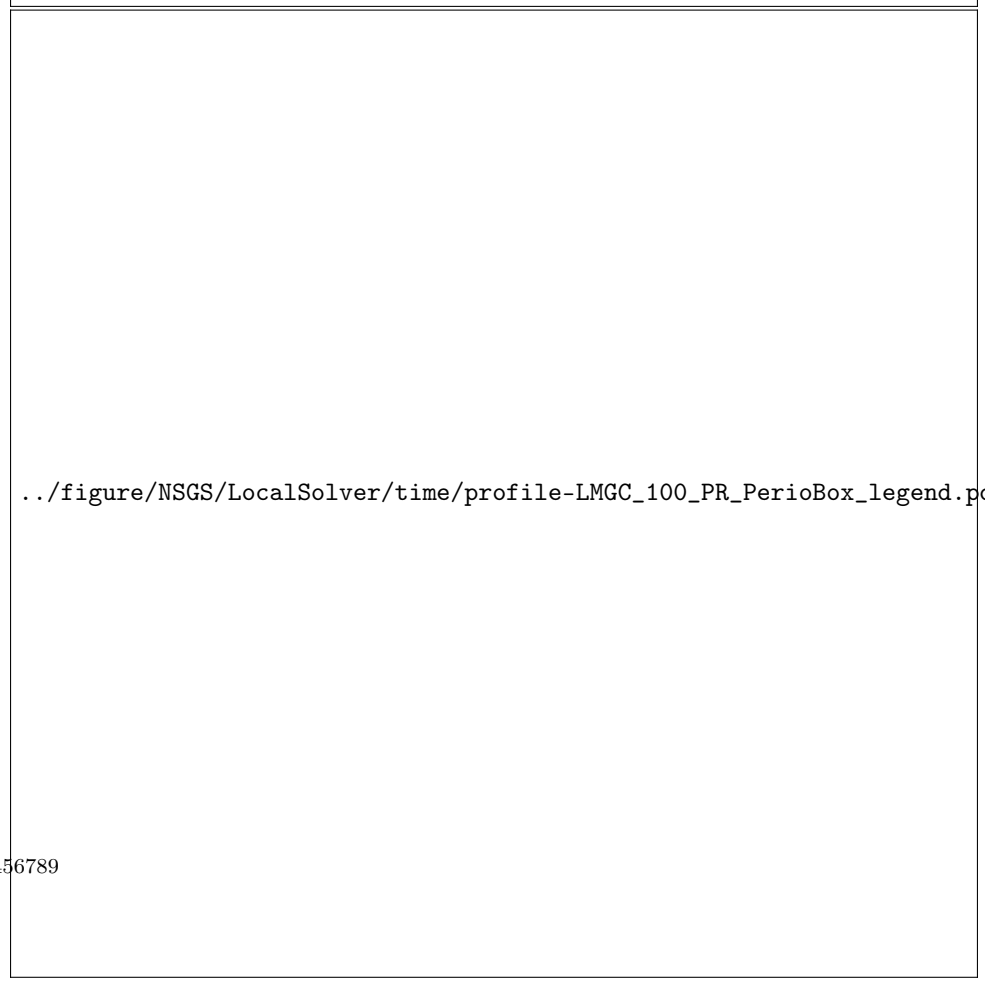
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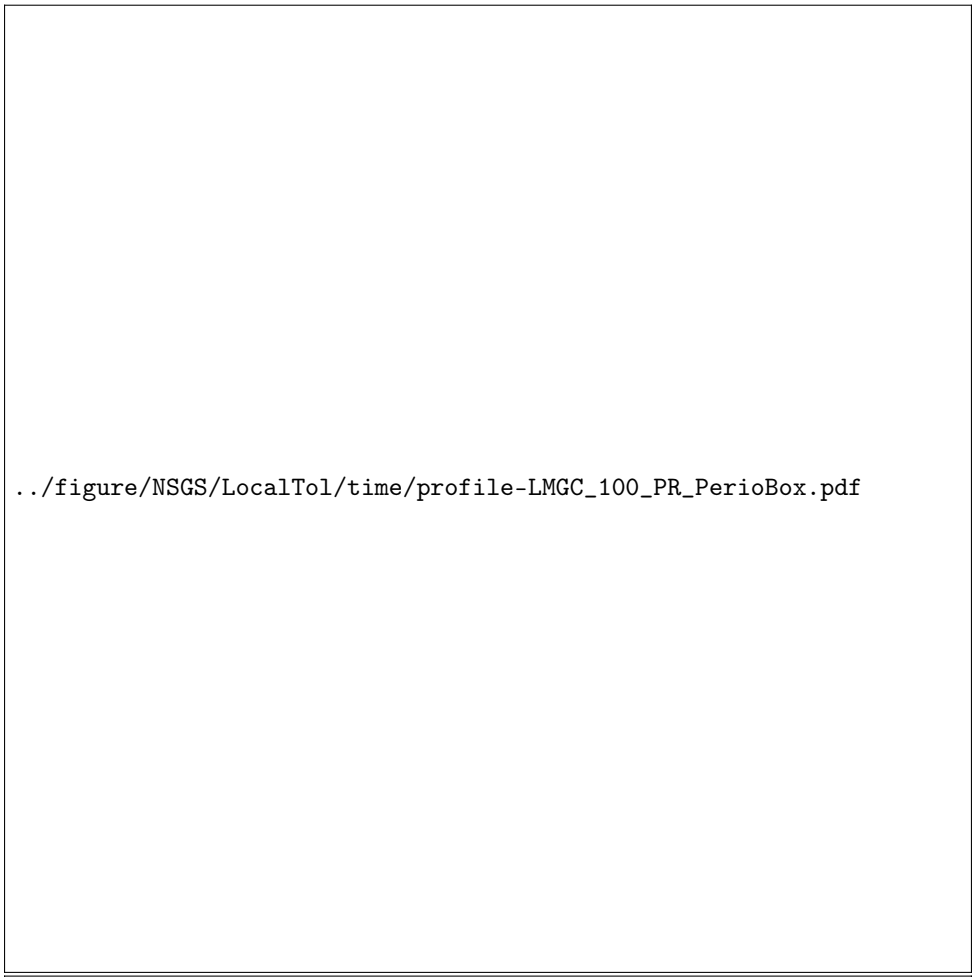
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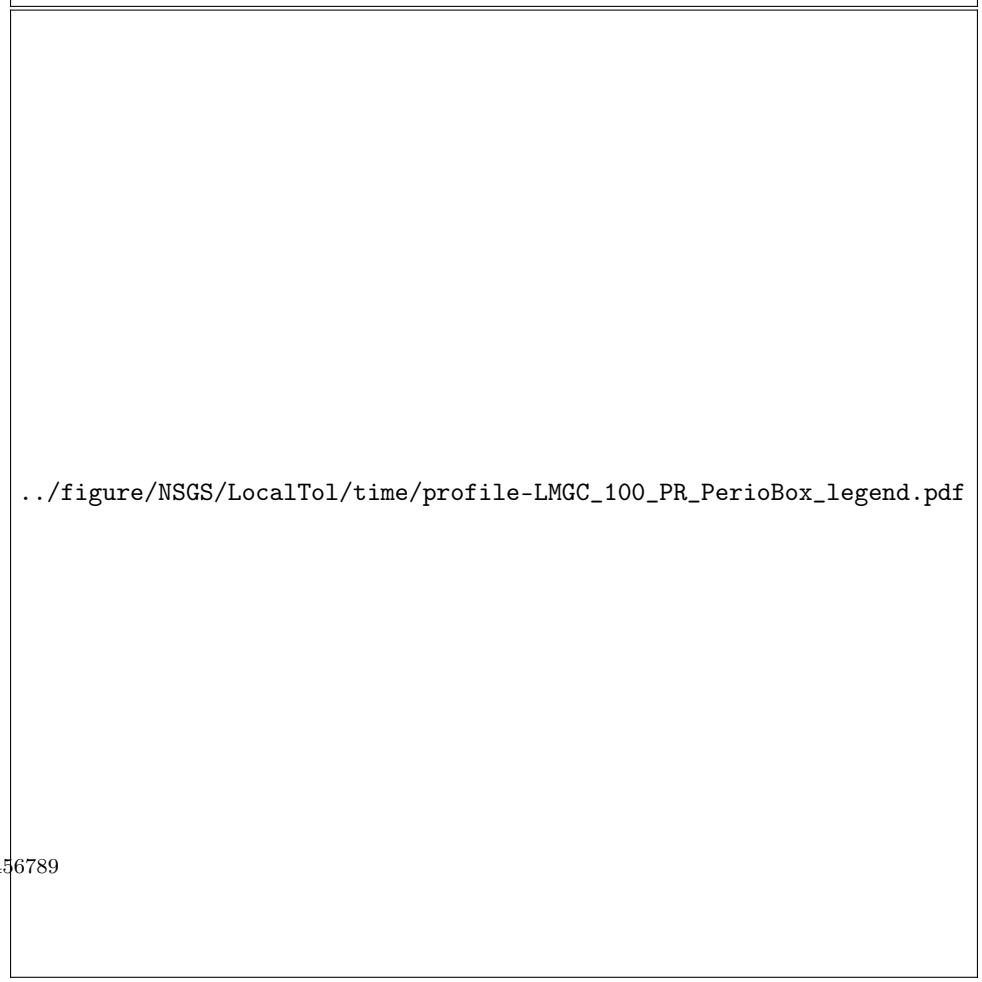
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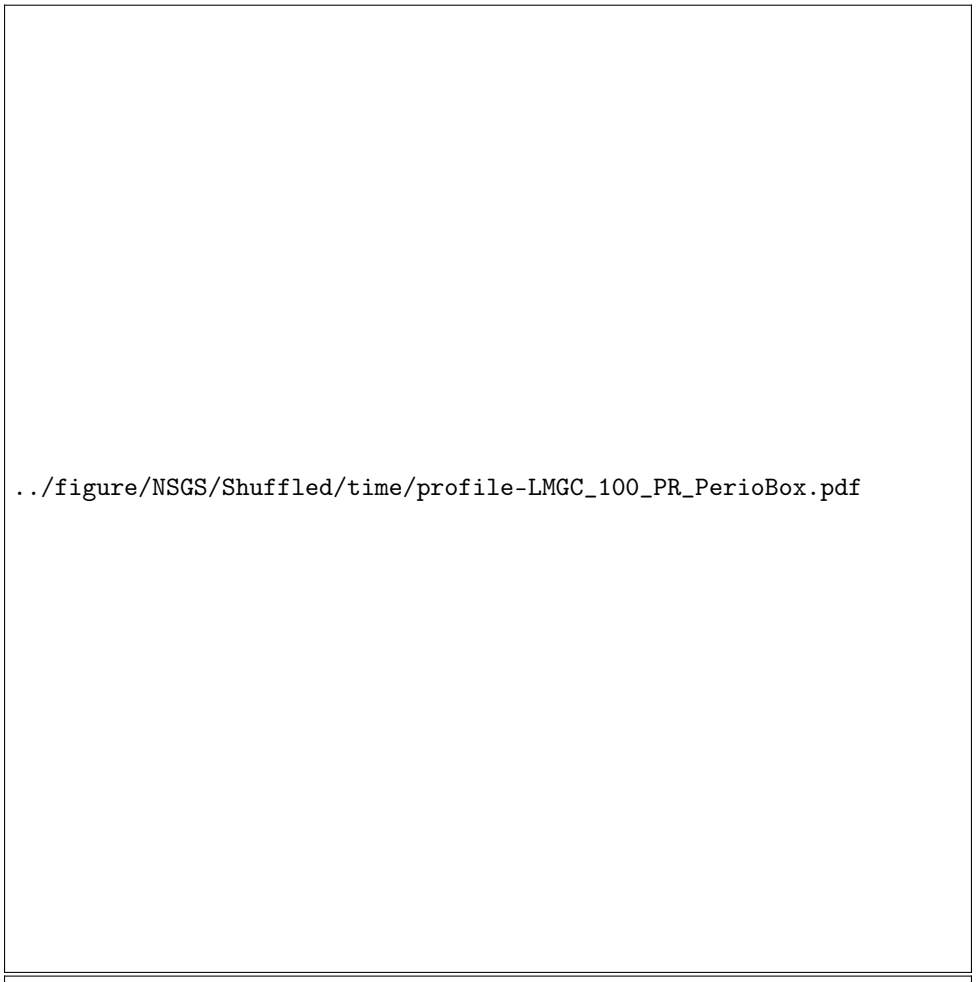
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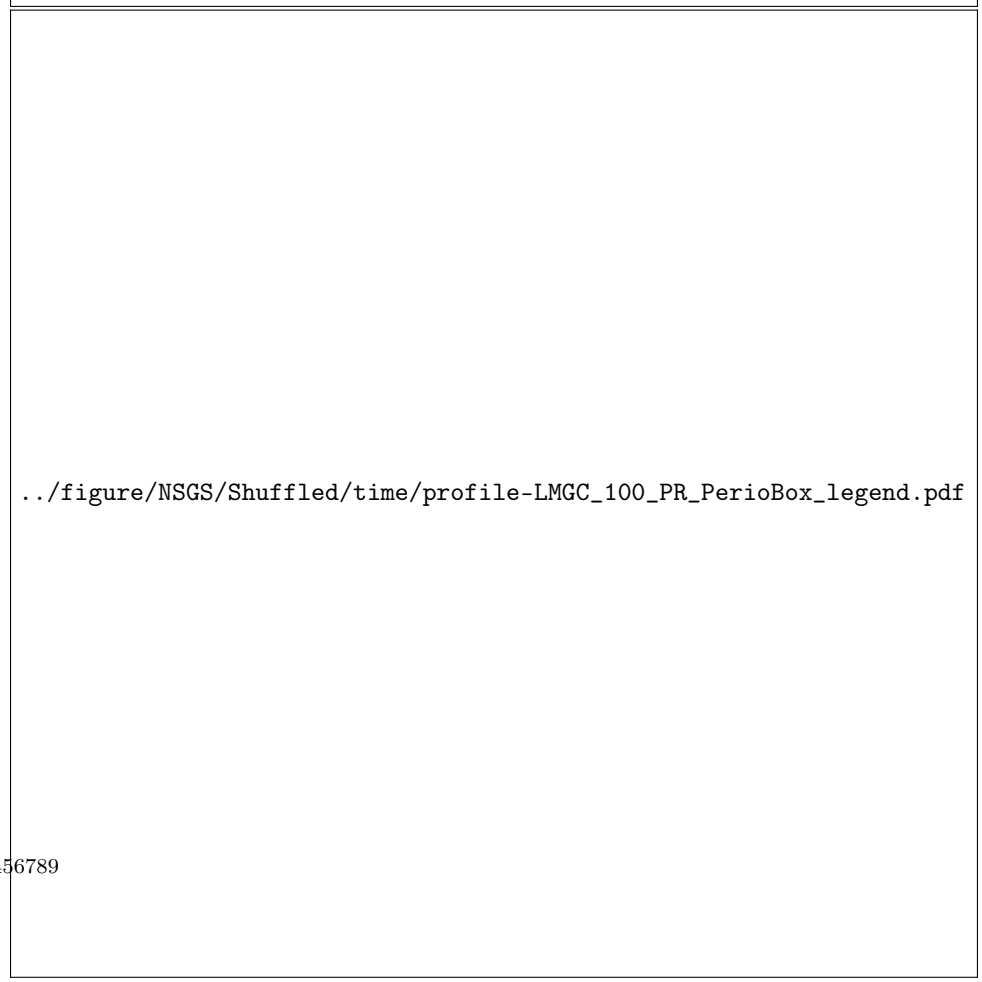
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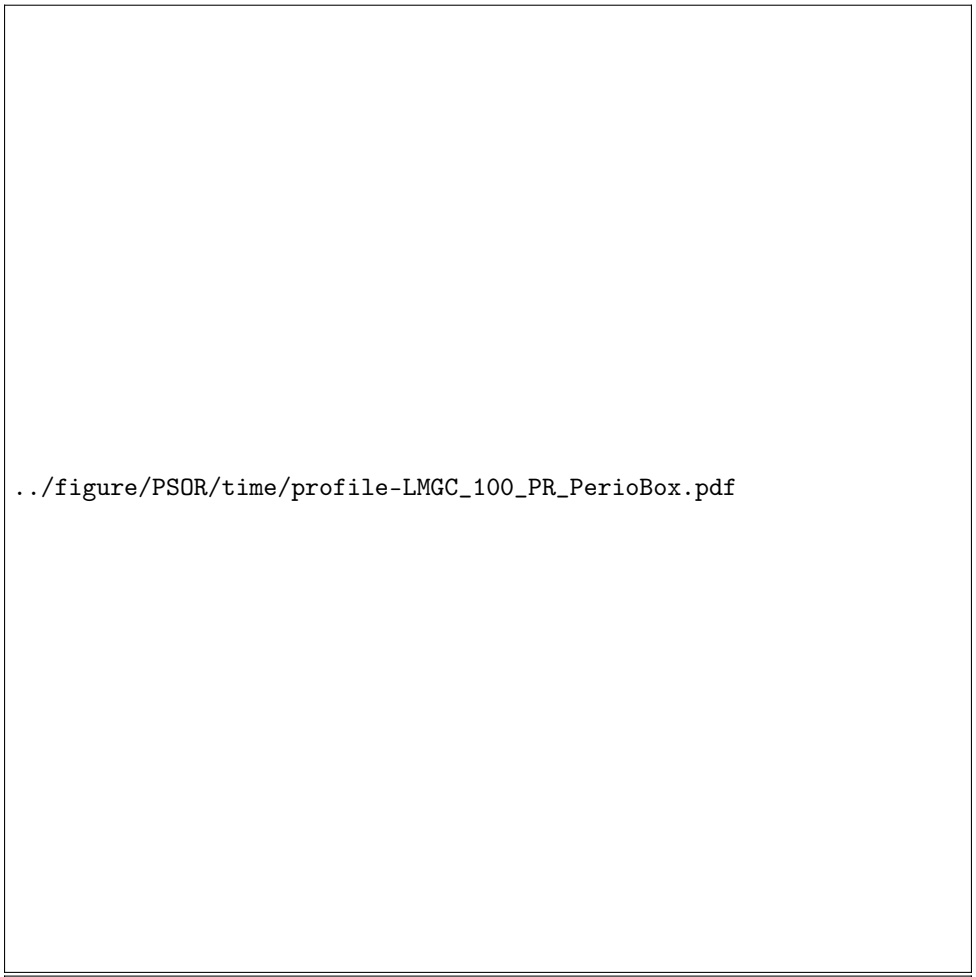
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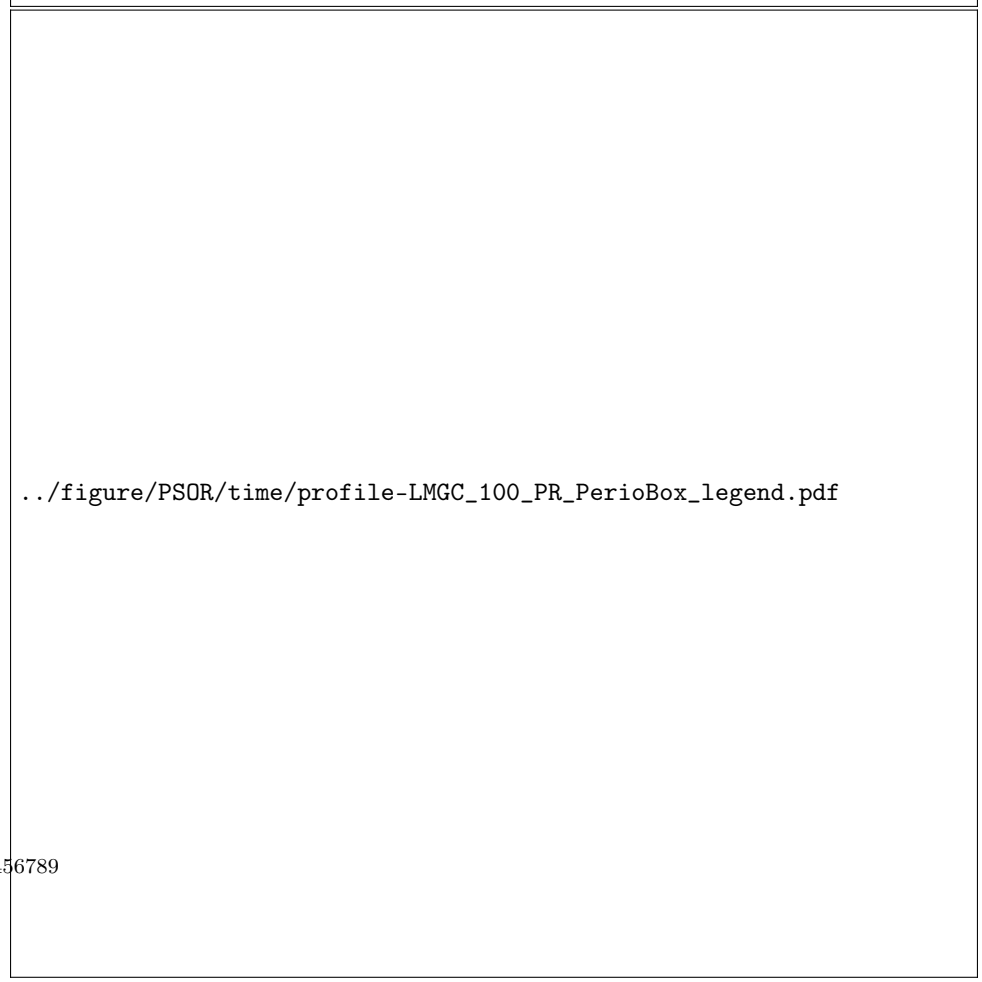
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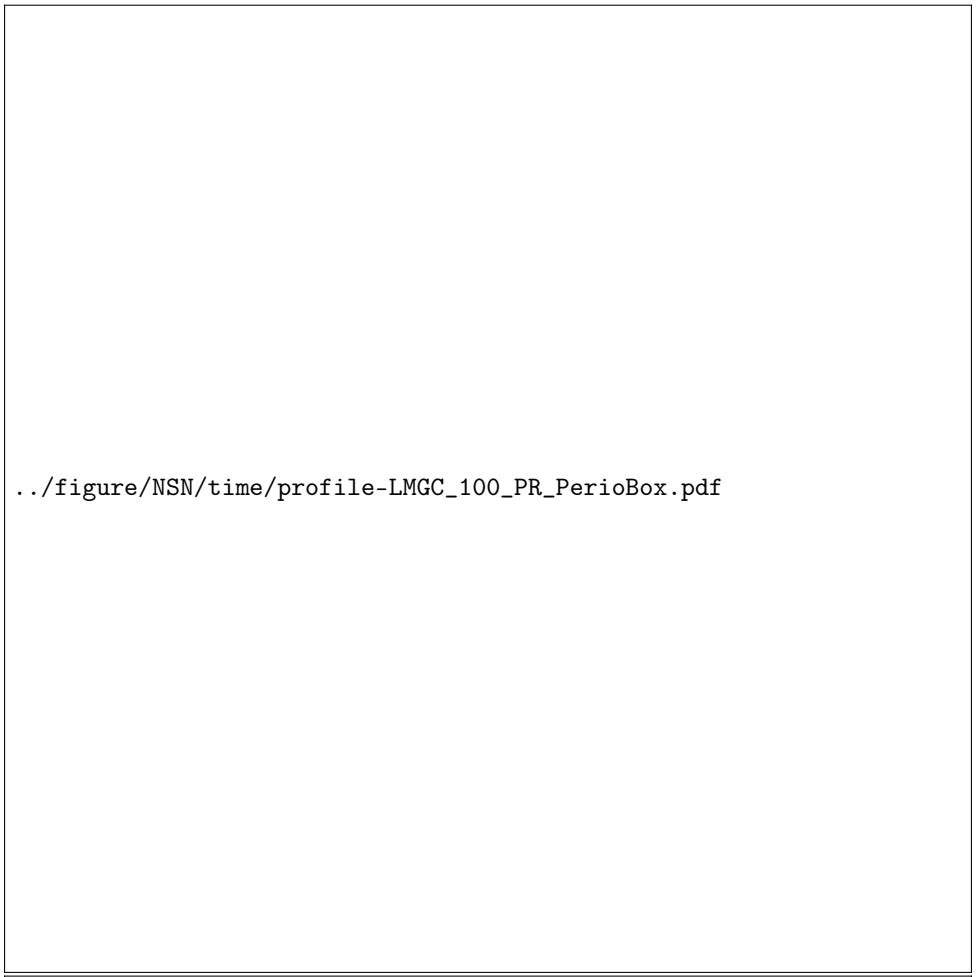
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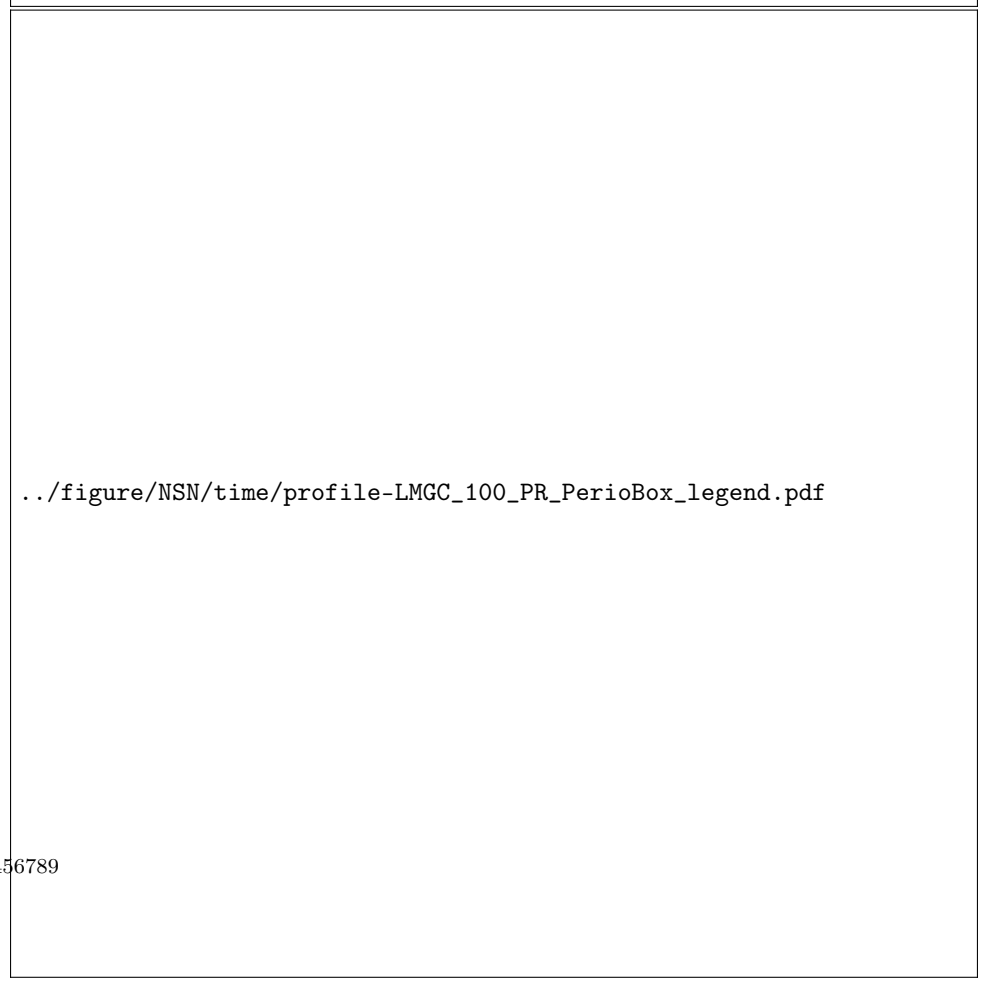
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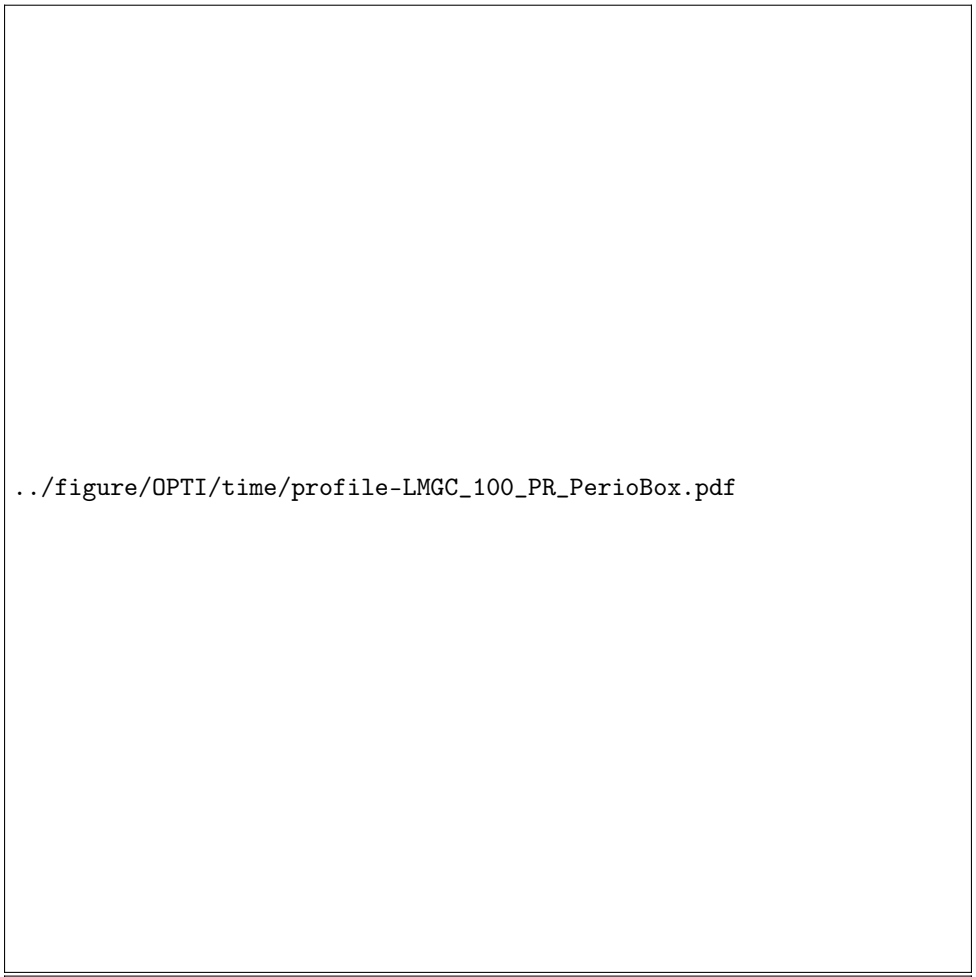
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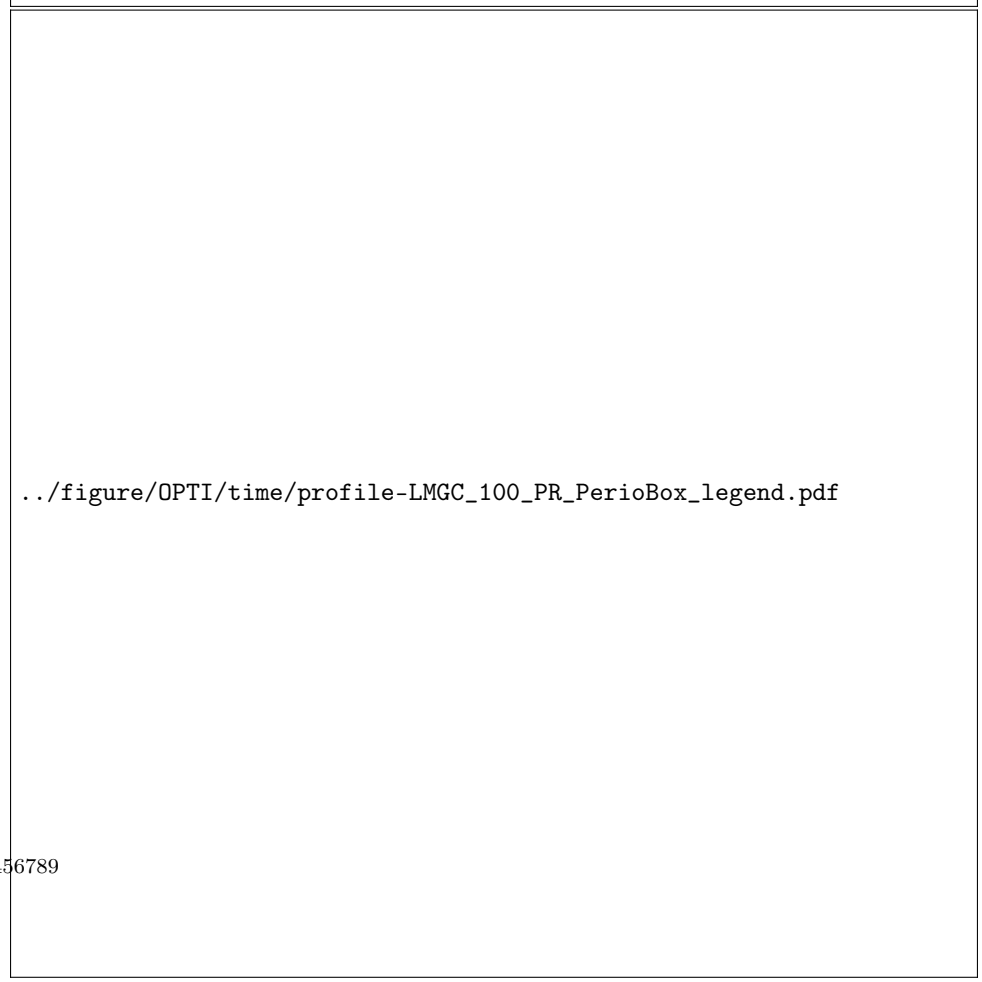
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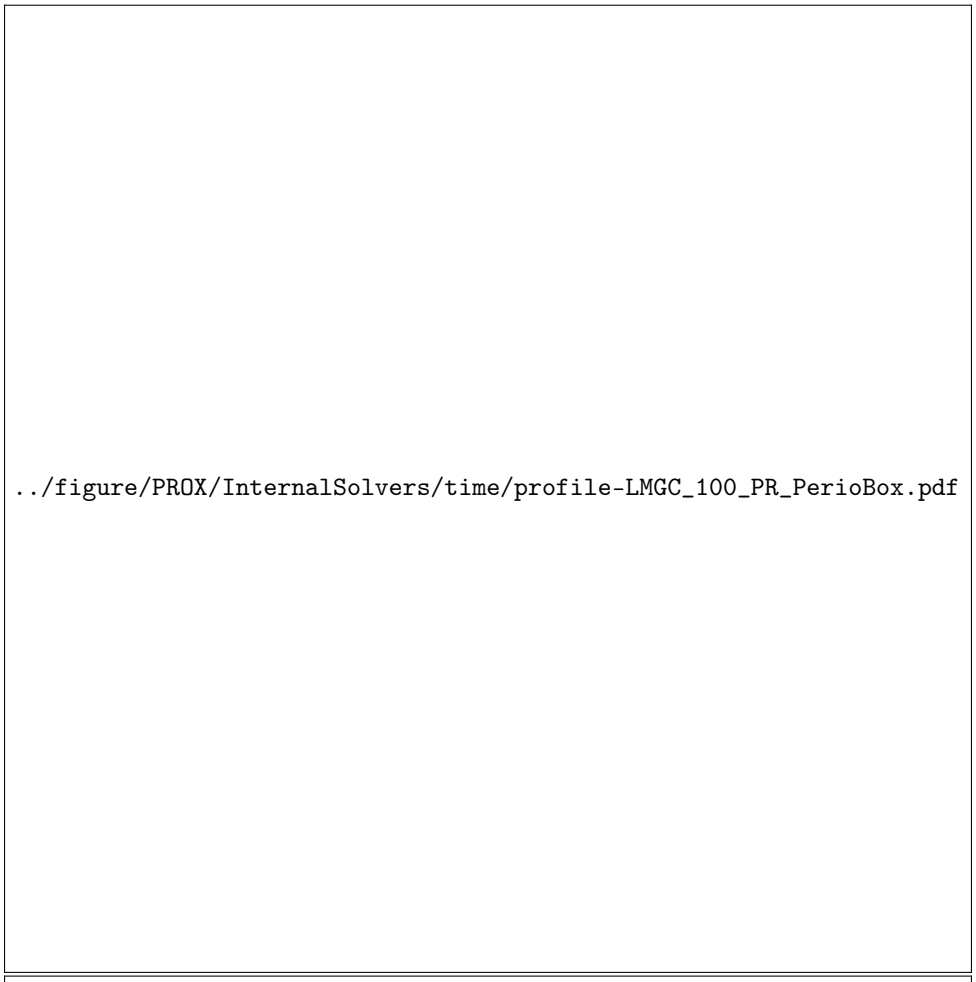
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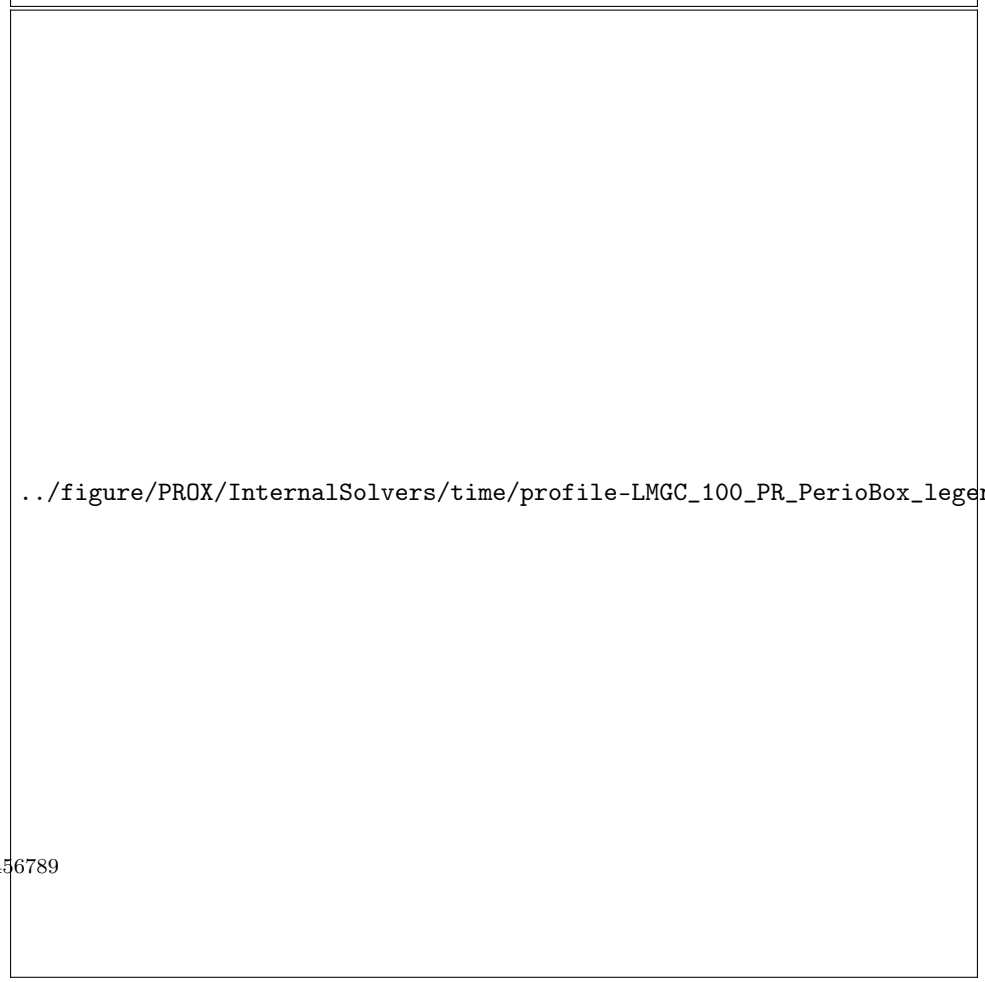
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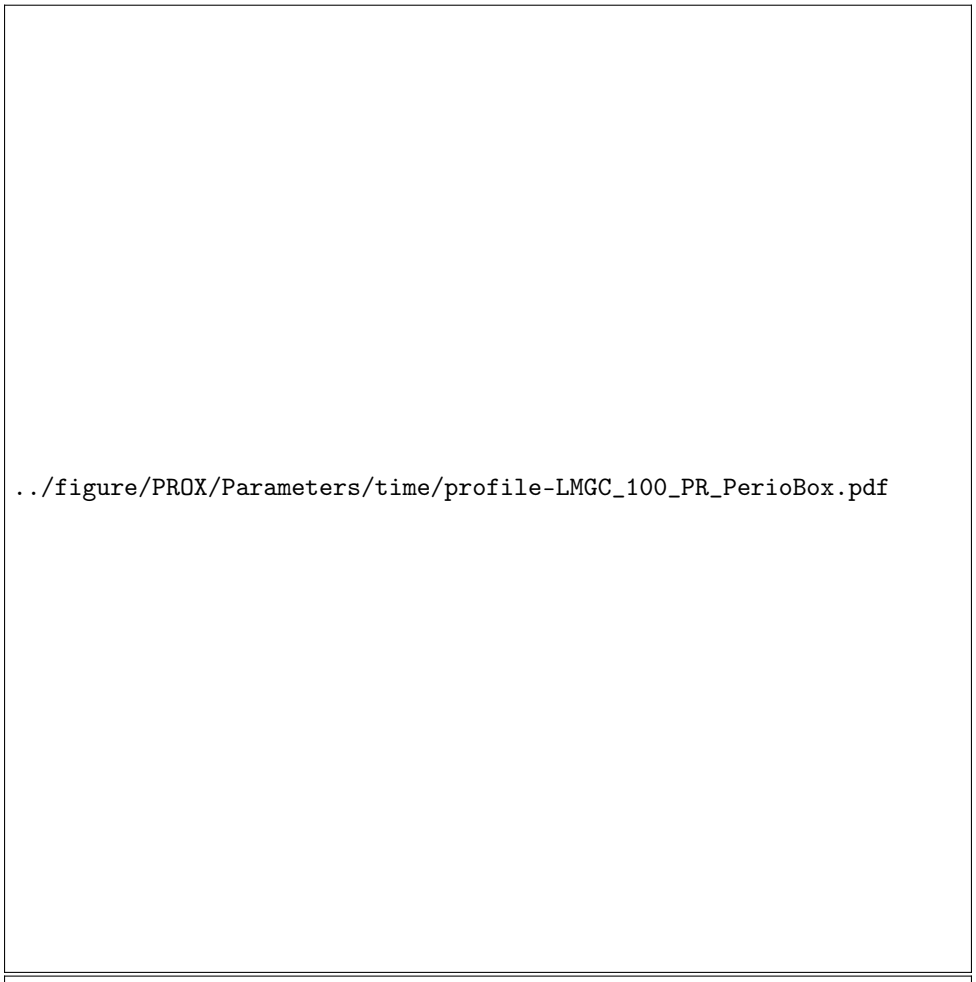
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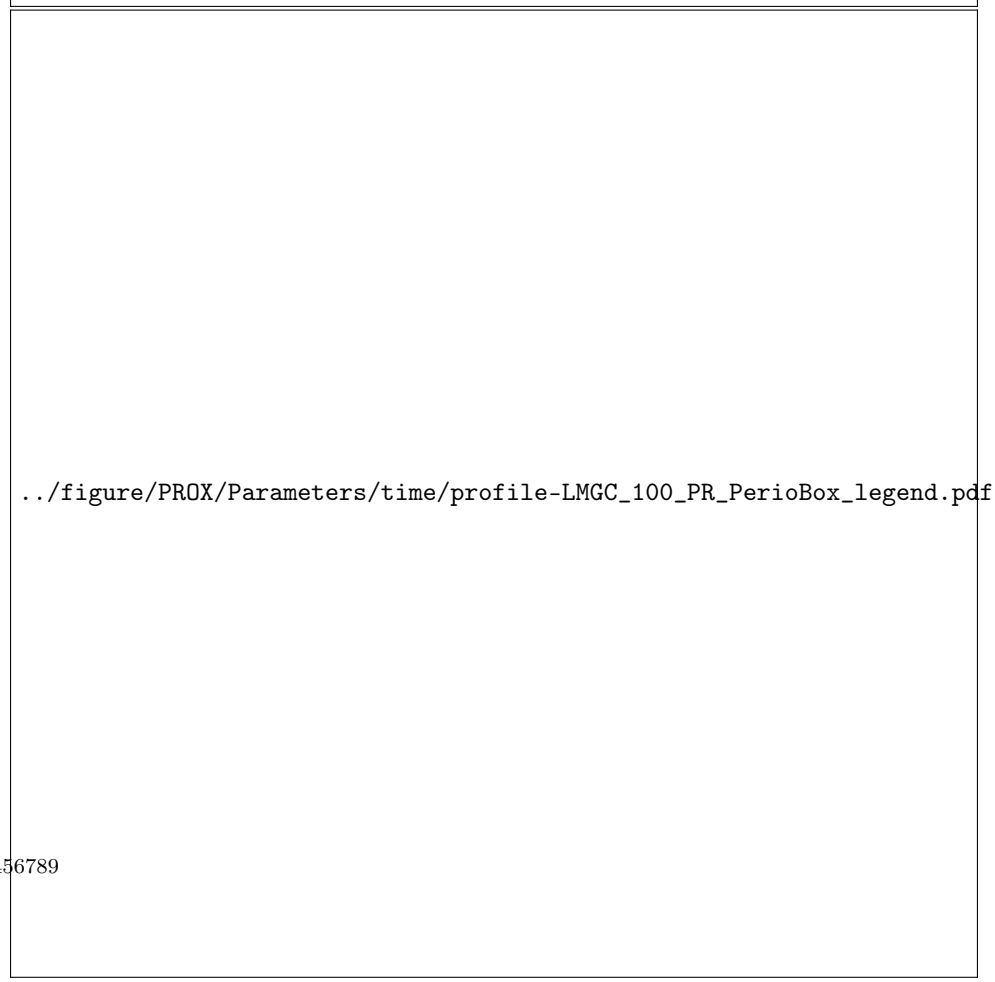
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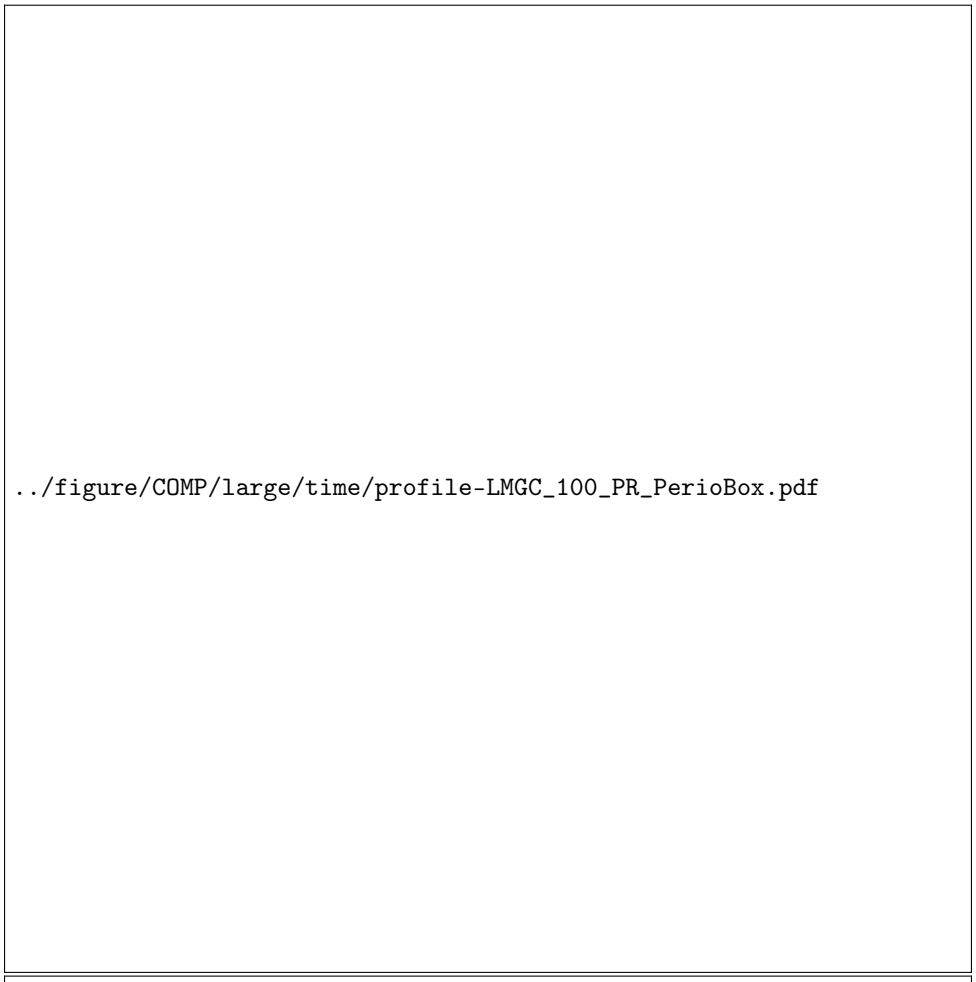
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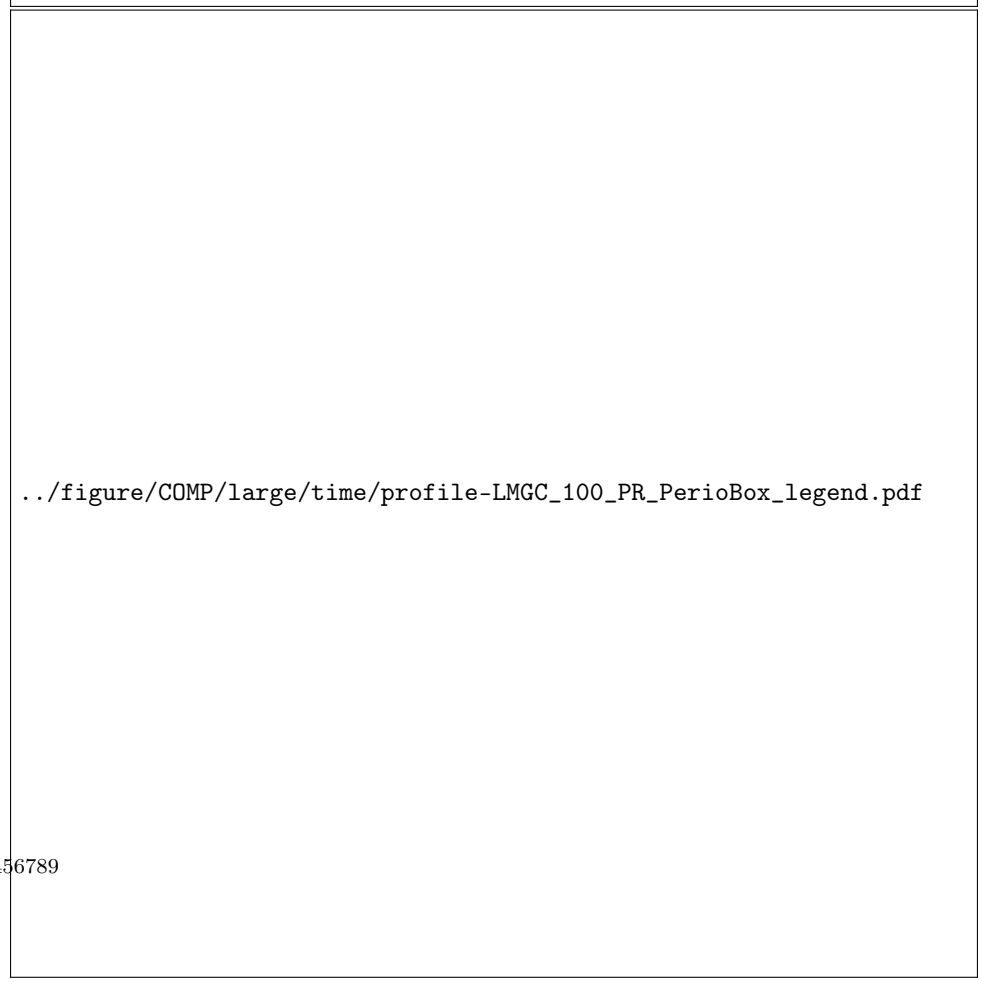
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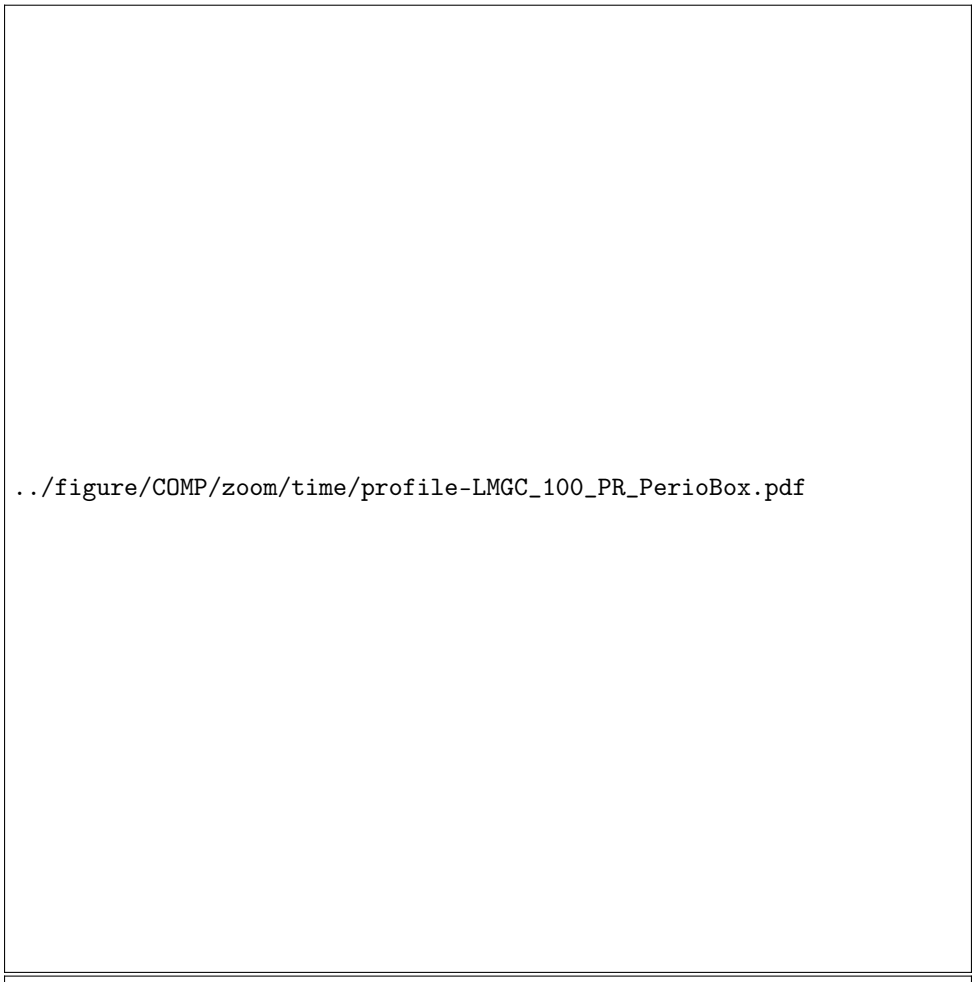
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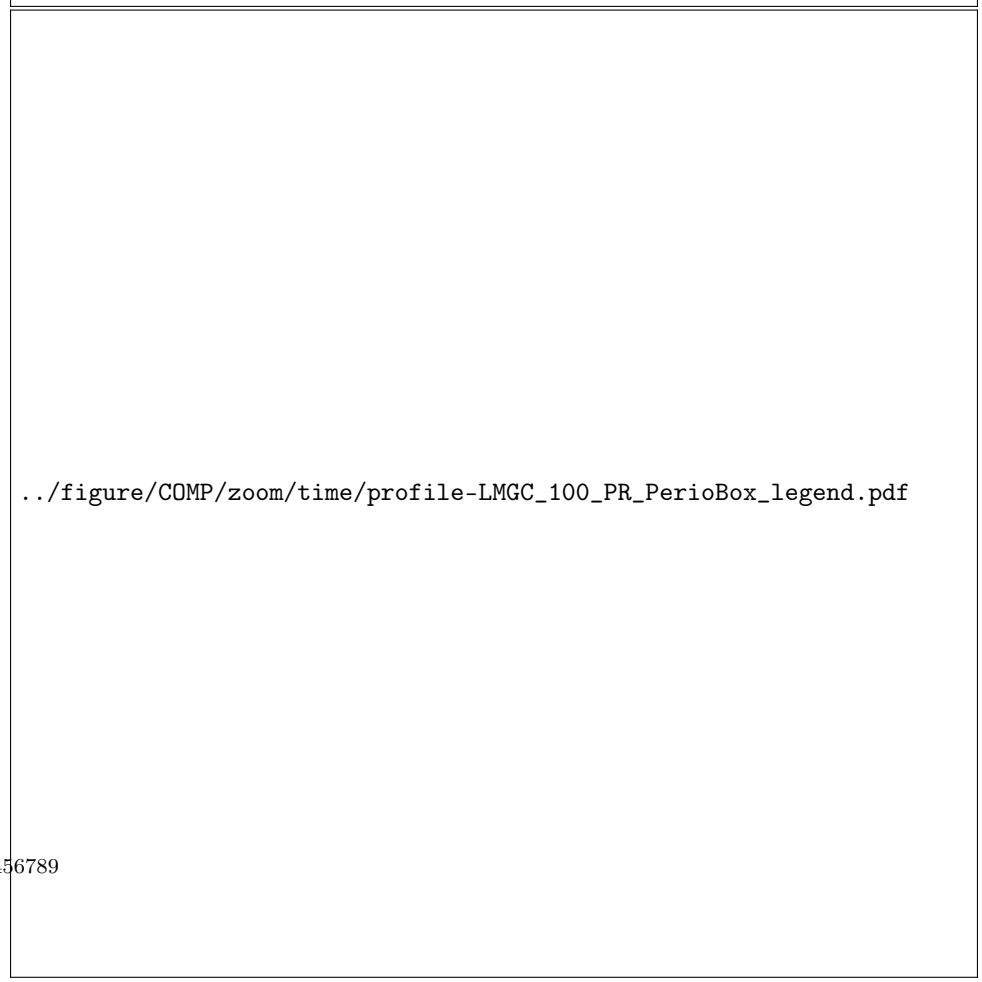
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2 LMGC_945_SP_Box_PL

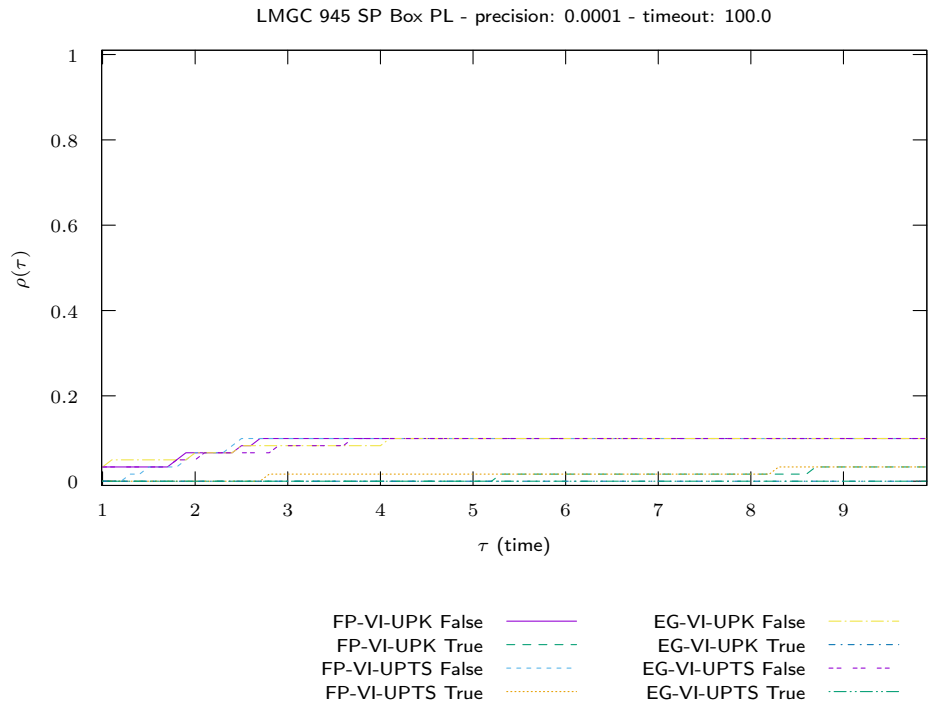


Figure 12: LMGC_945_SP_Box_PL time VI/UpdateRule

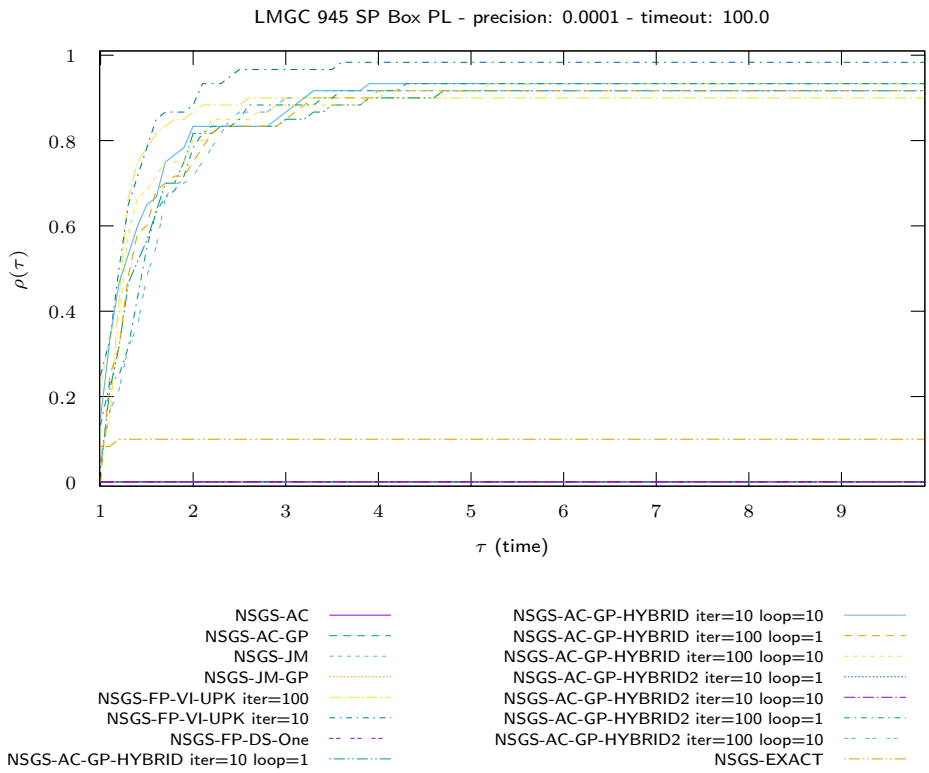


Figure 13: LMGC_945_SP_Box_PL time NSGS/LocalSolver

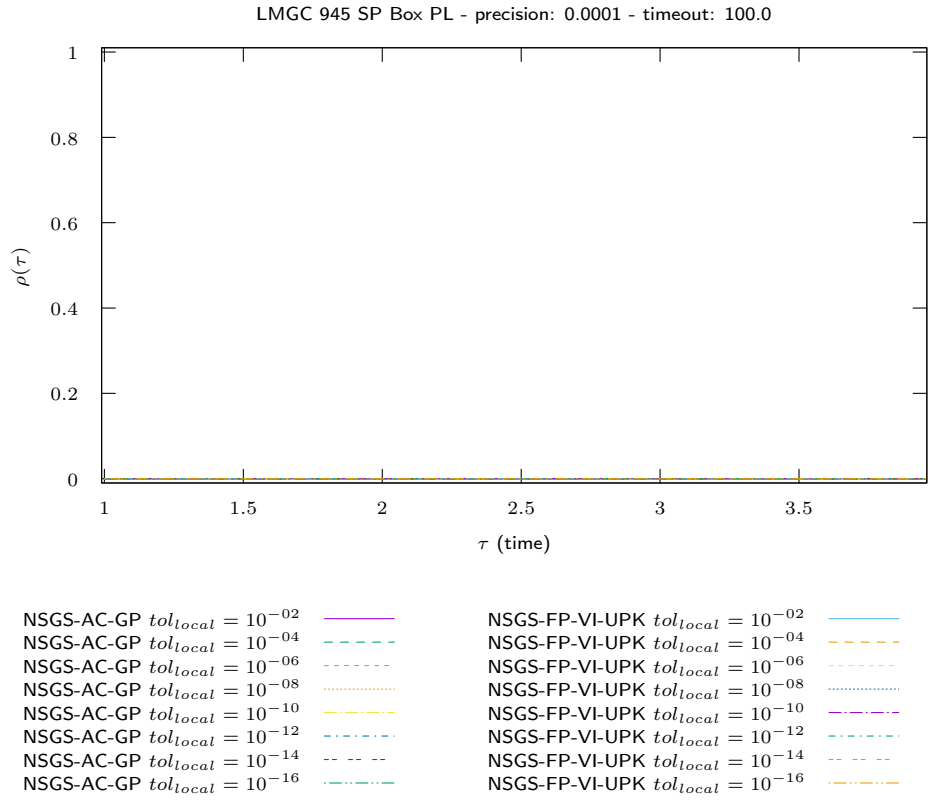


Figure 14: LMGC_945_SP_Box_PL time NSGS/LocalTol

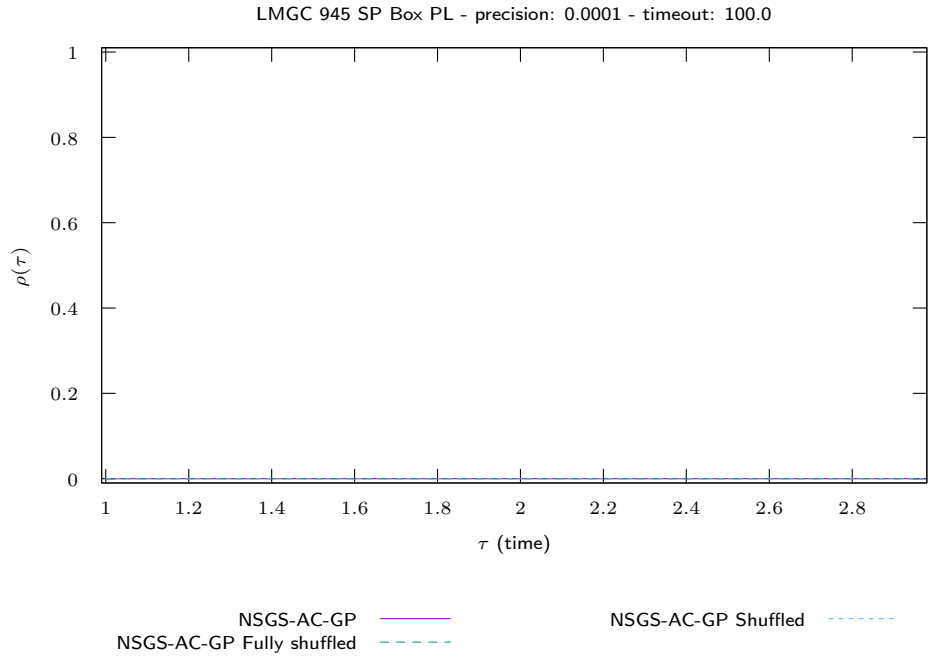


Figure 15: LMGC_945_SP_Box_PL time NSGS/Shuffled

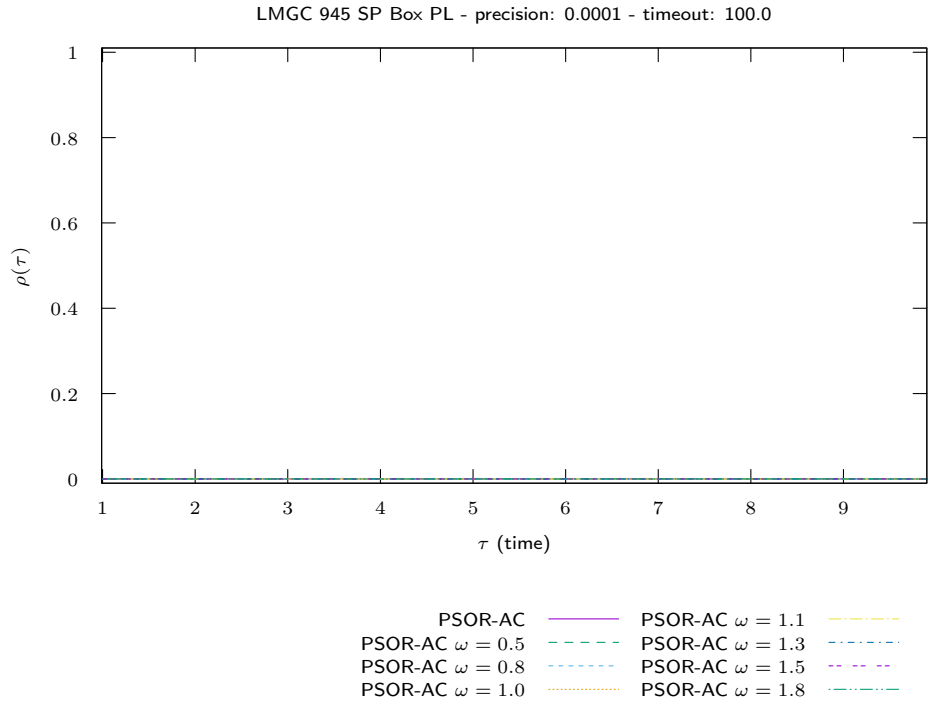


Figure 16: LMGC_945_SP_Box_PL time PSOR

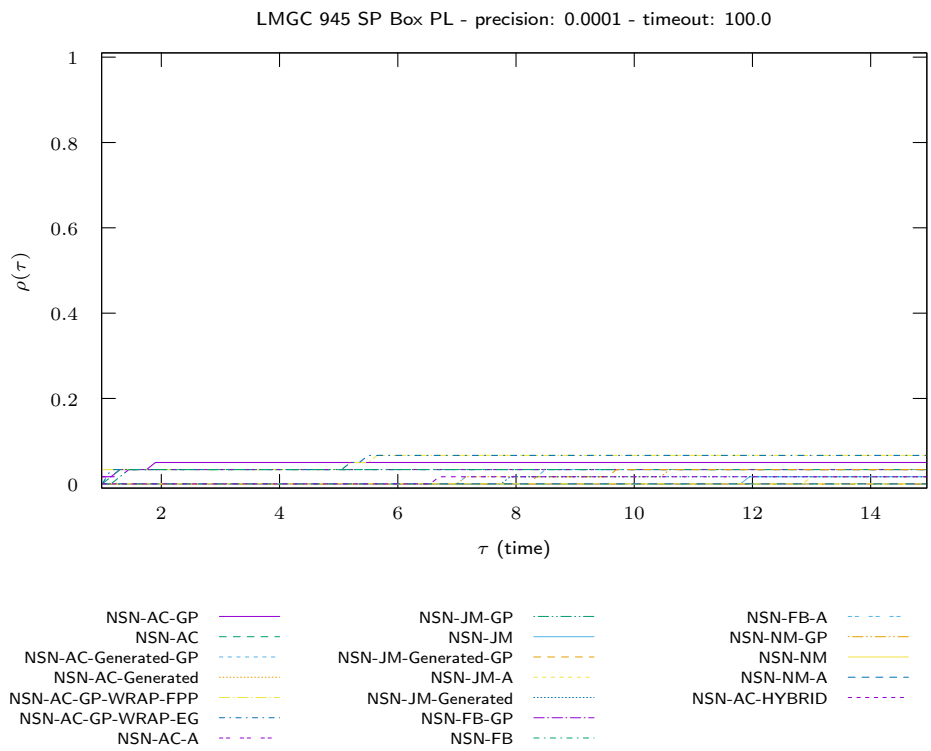


Figure 17: LMGC_945_SP_Box_PL time NSN

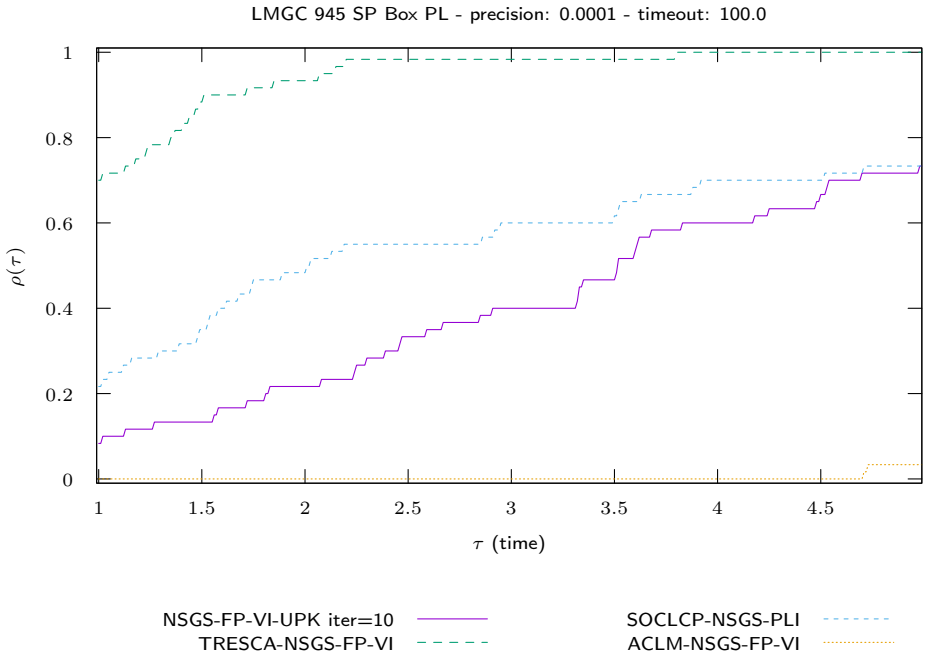


Figure 18: LMGC_945_SP_Box_PL time OPTI

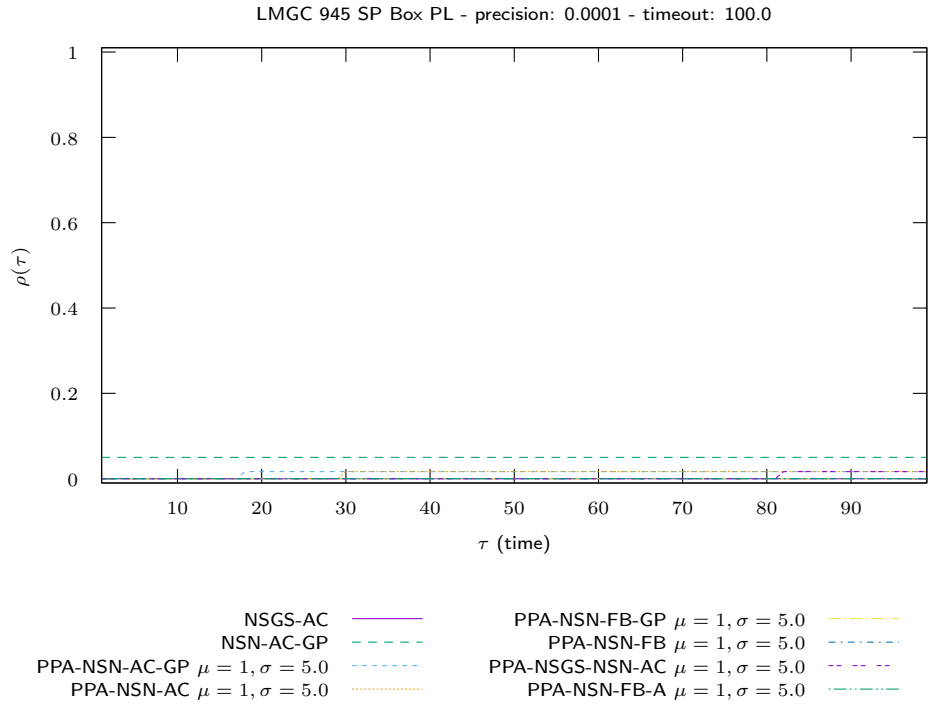
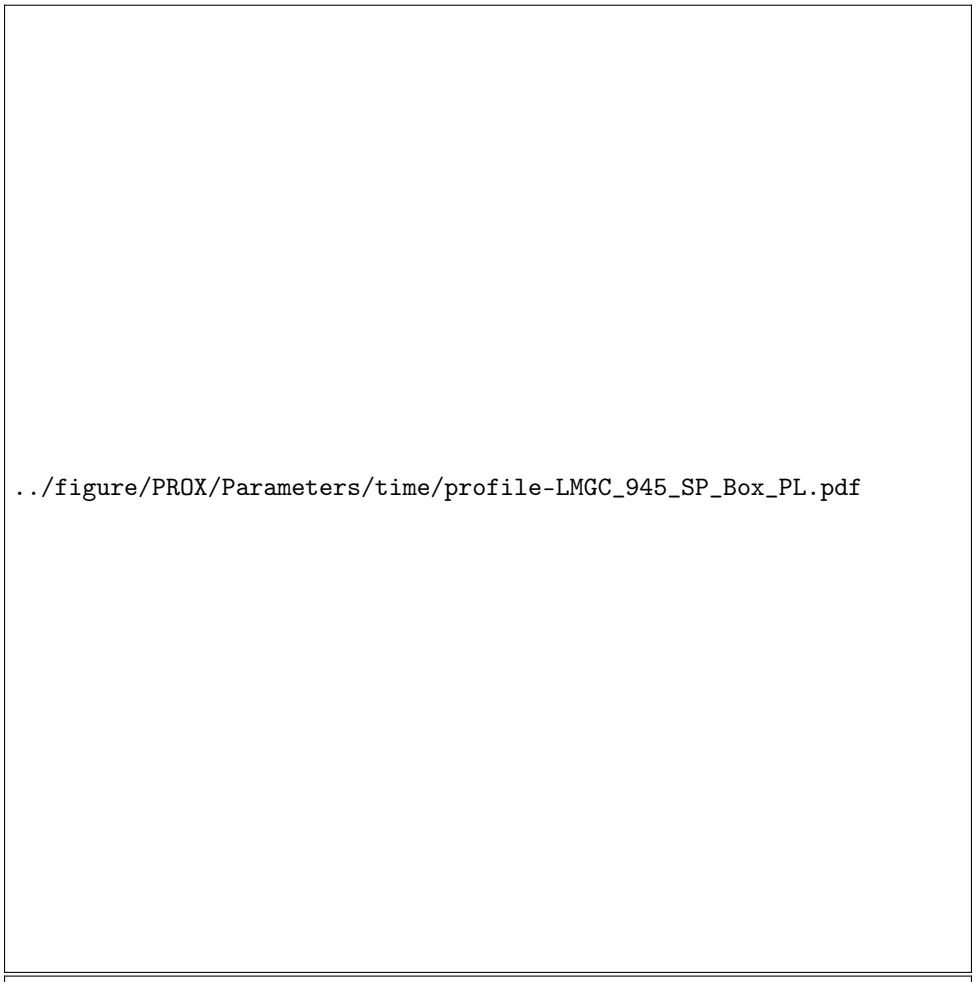


Figure 19: LMGC_945_SP_Box_PL time PROX/InternalSolvers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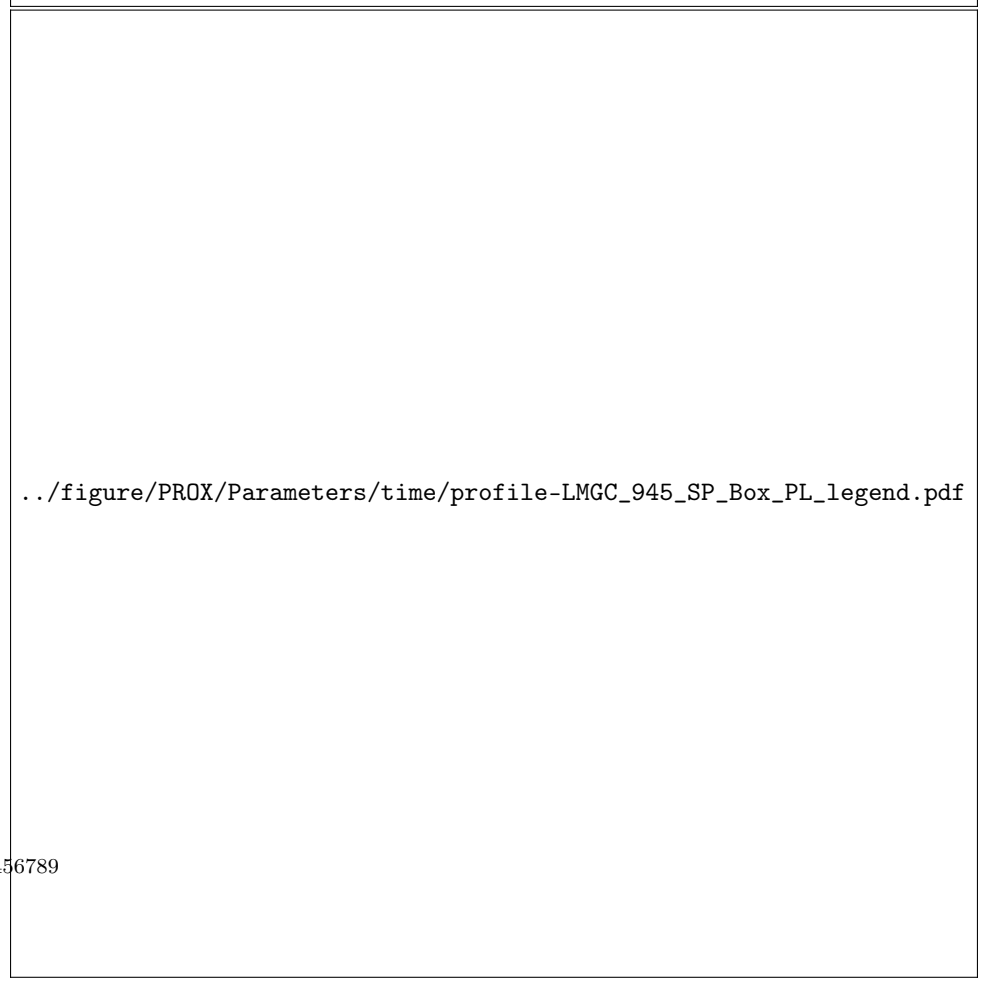
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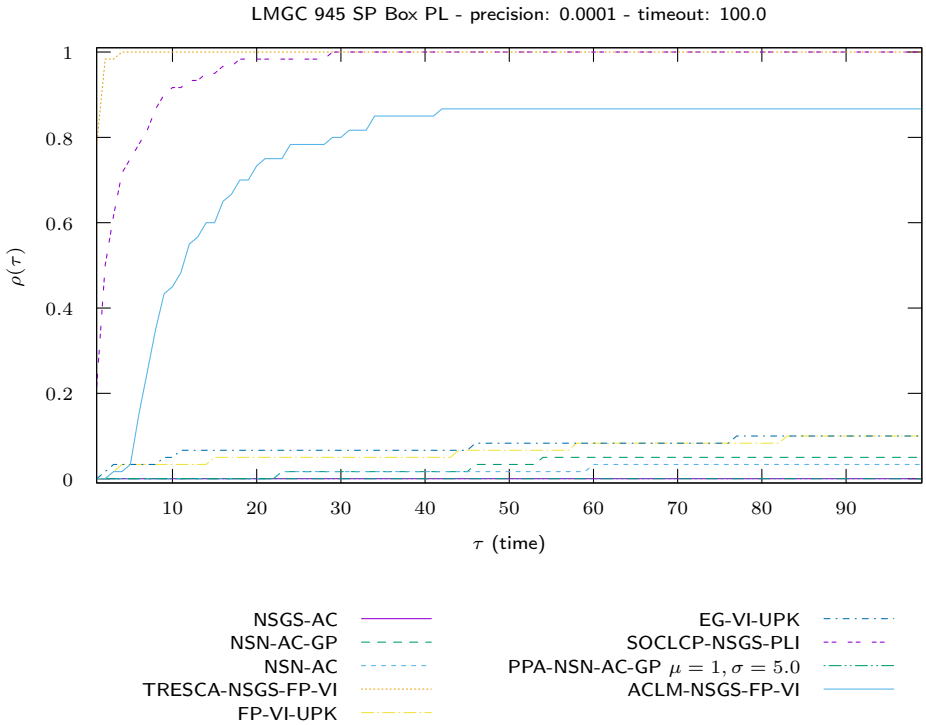


Figure 21: LMGC_945_SP_Box_PL time COMP/large

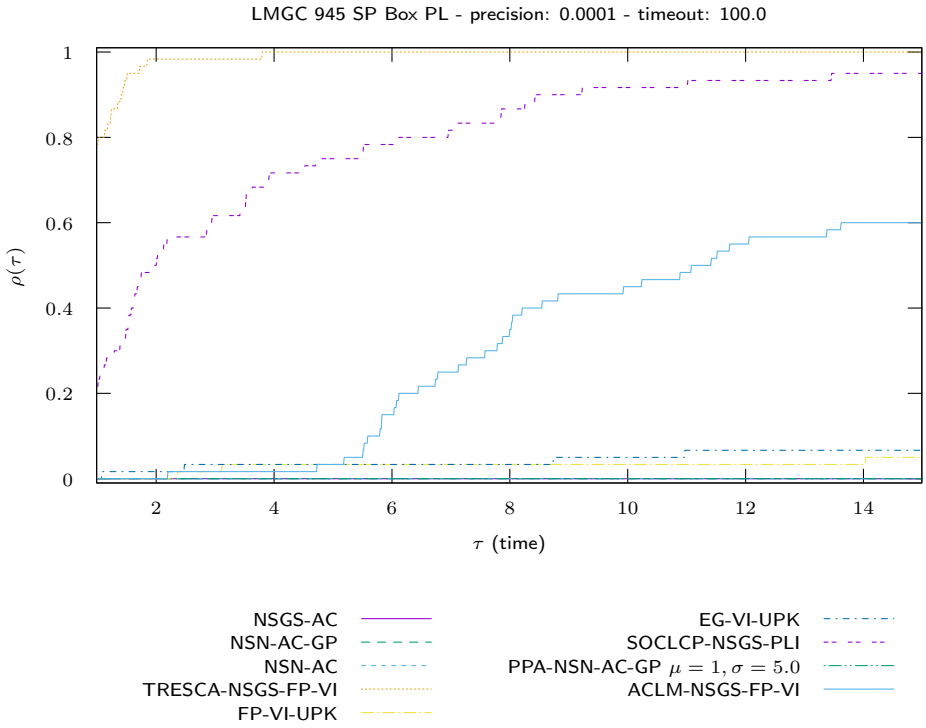


Figure 22: LMGC_945_SP_Box_PL time COMP/large

3 LMGC Aqueduc PR

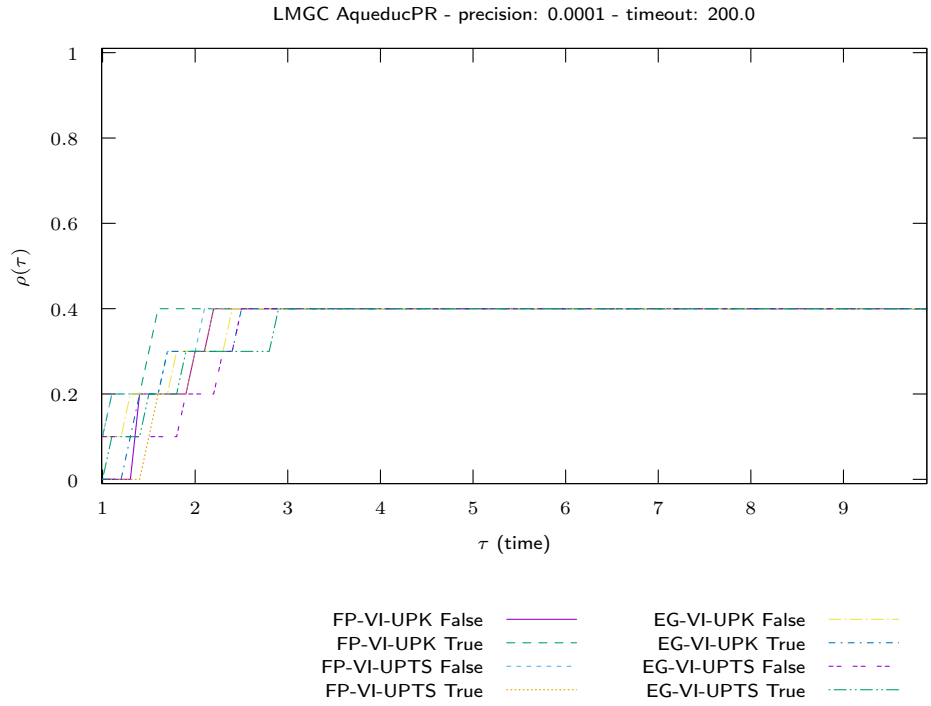


Figure 23: LMGC Aqueduc PR time VI/UpdateRule

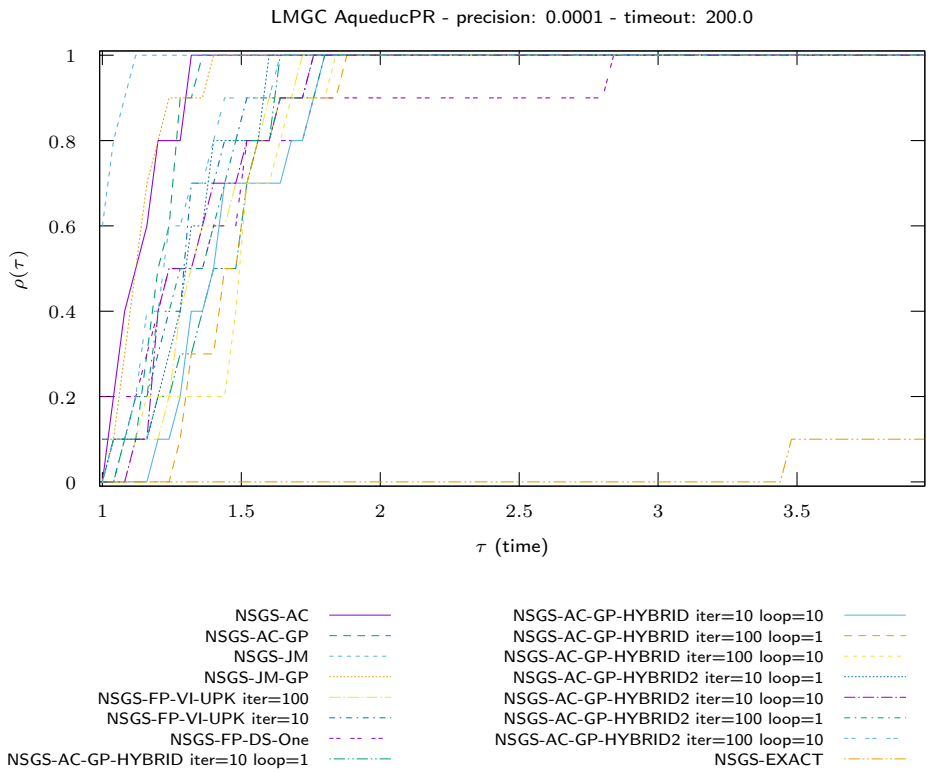
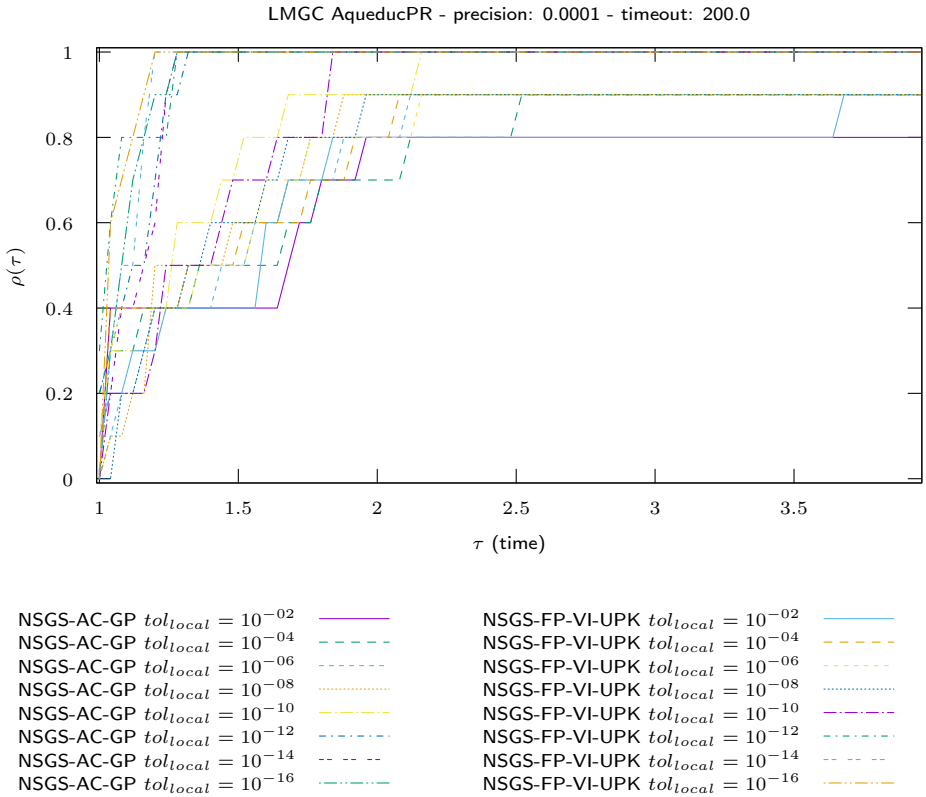


Figure 24: LMGC Aqueduc PR time NSGS/LocalSolver



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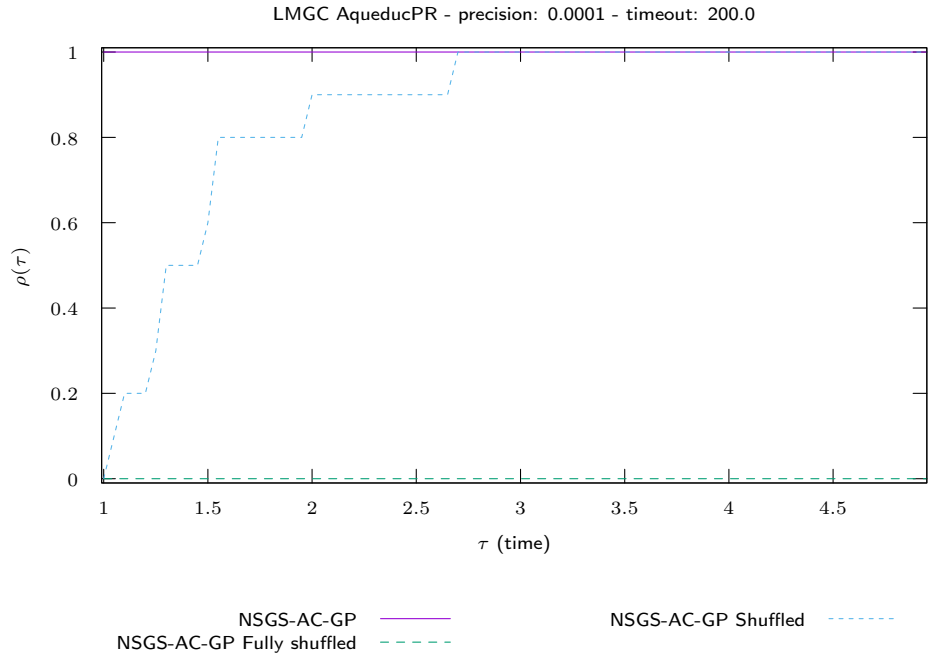


Figure 26: LMGC Aqueduc PR time NSGS/Shuffled

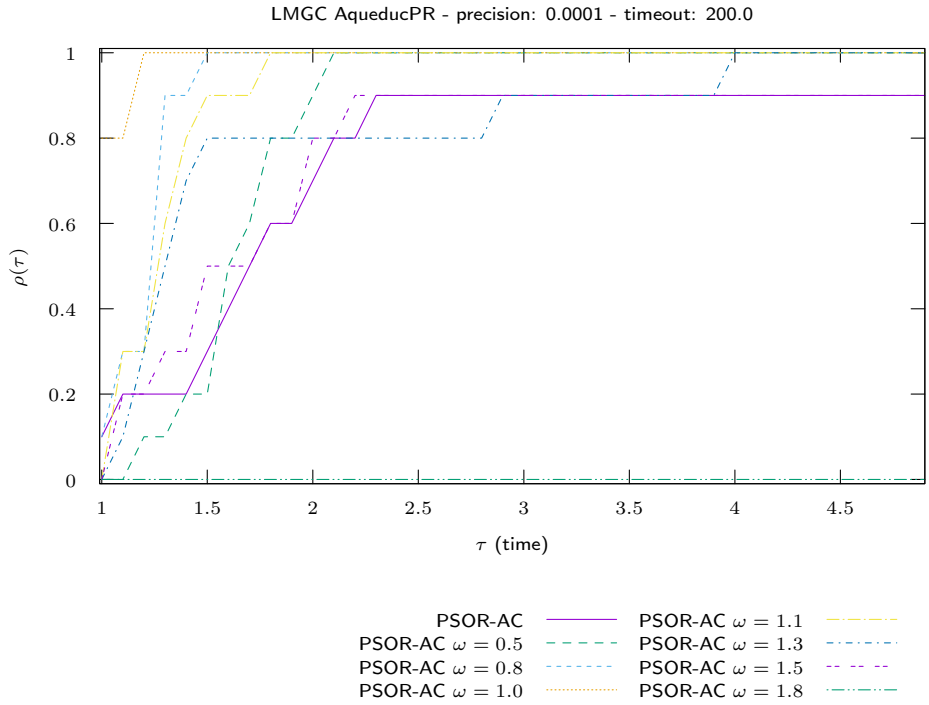
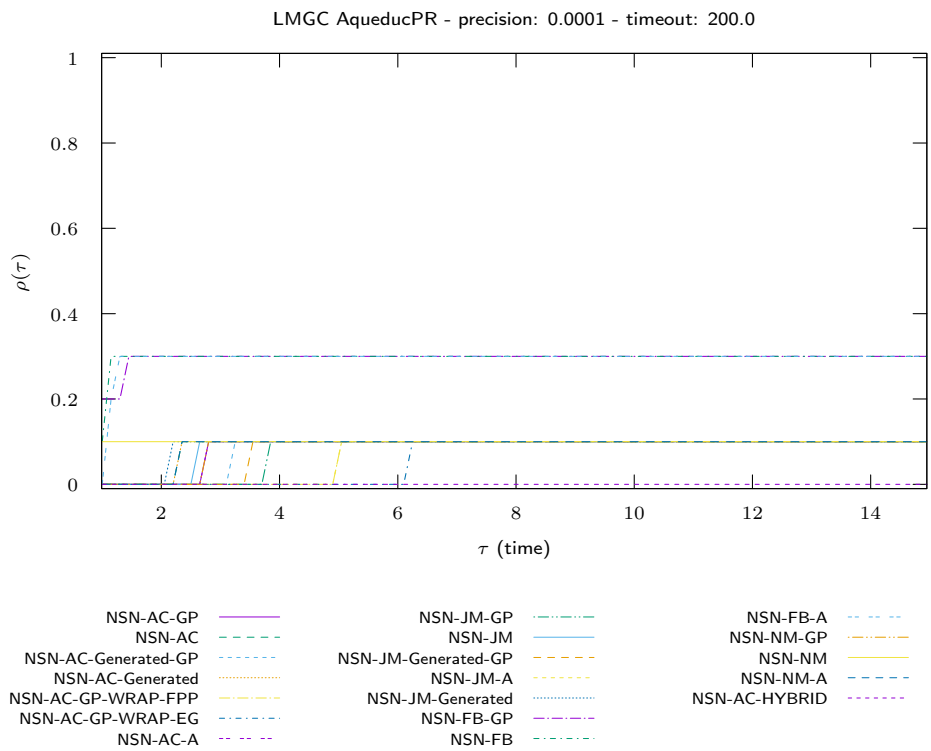


Figure 27: LMGC Aqueduc PR time PSOR



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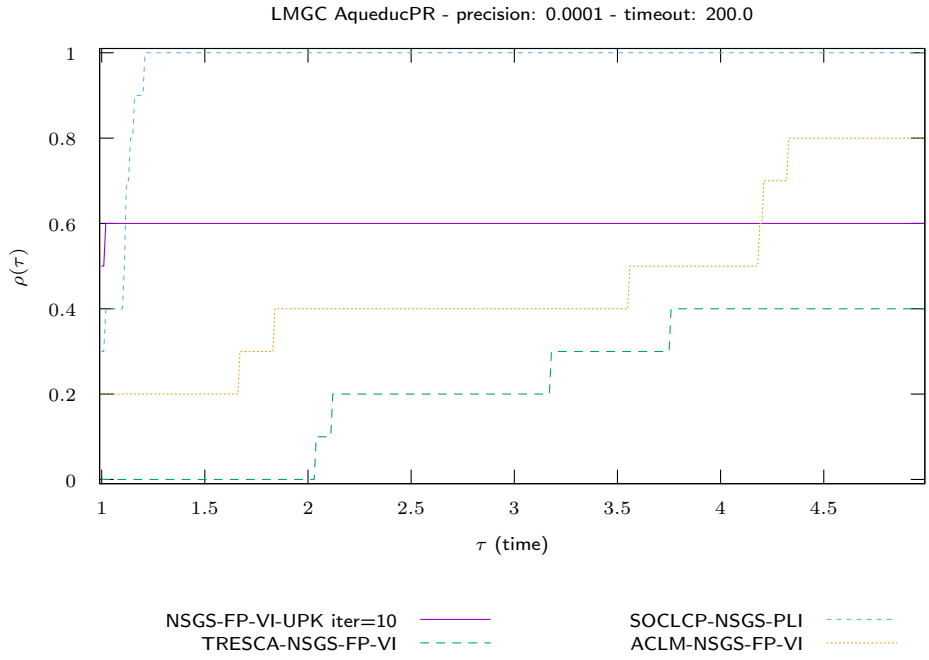

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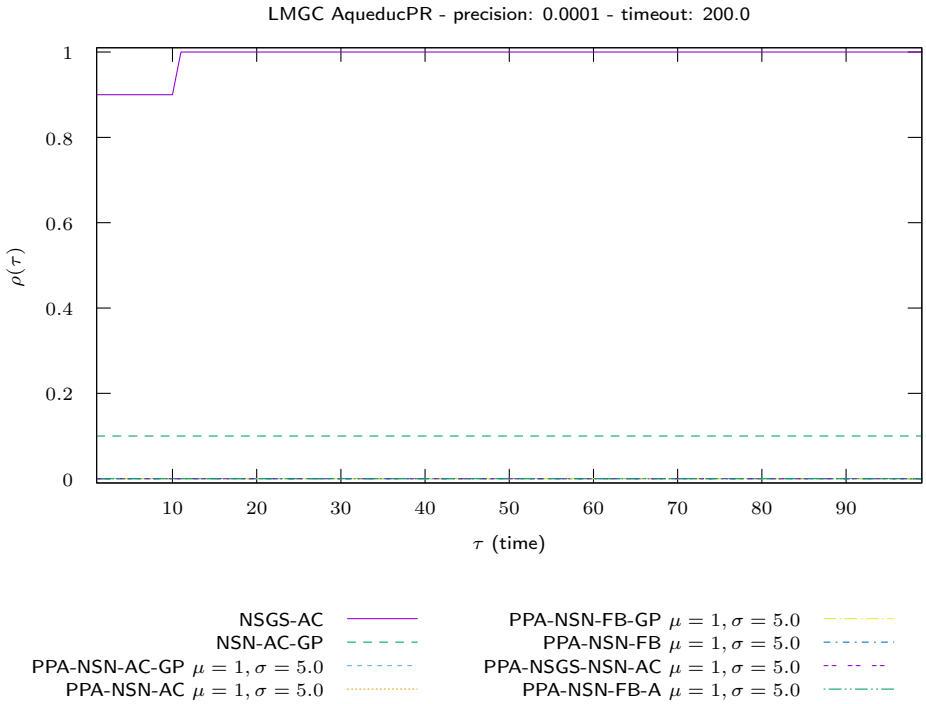
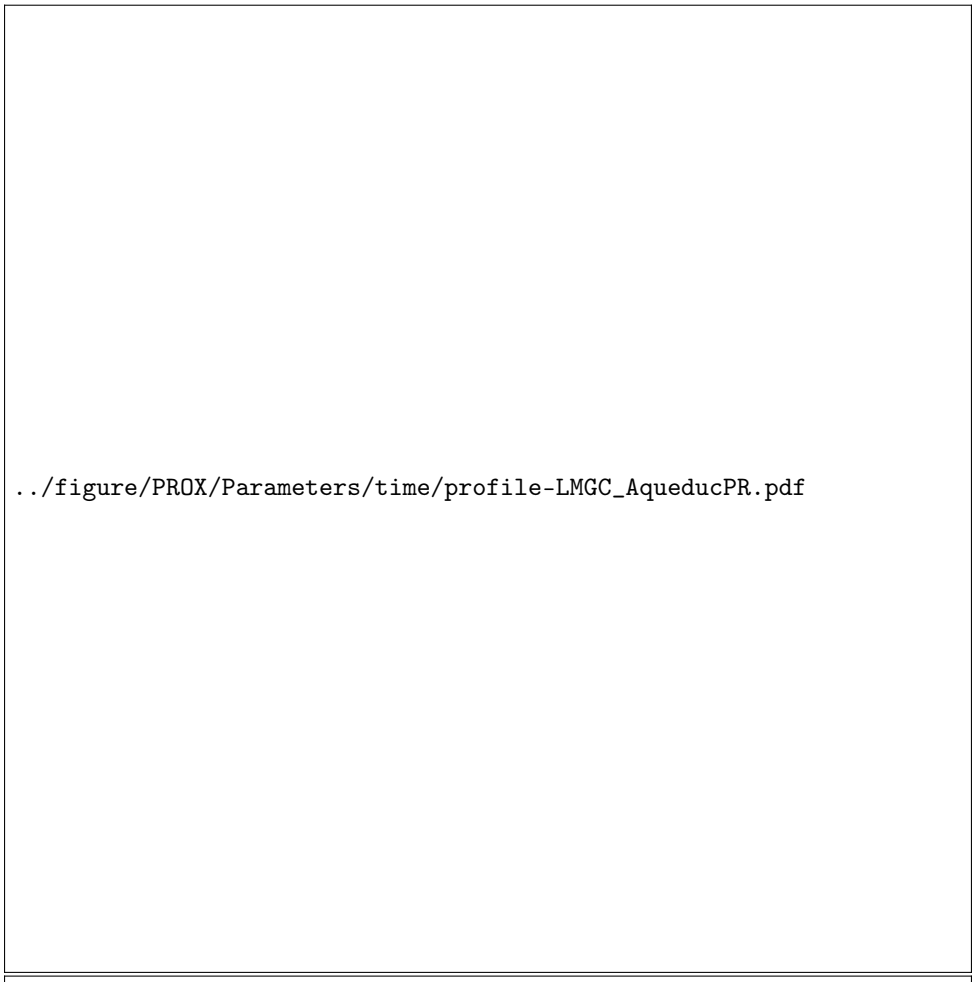


Figure 30: LMGC Aqueduc PR time PROX/InternalSolvers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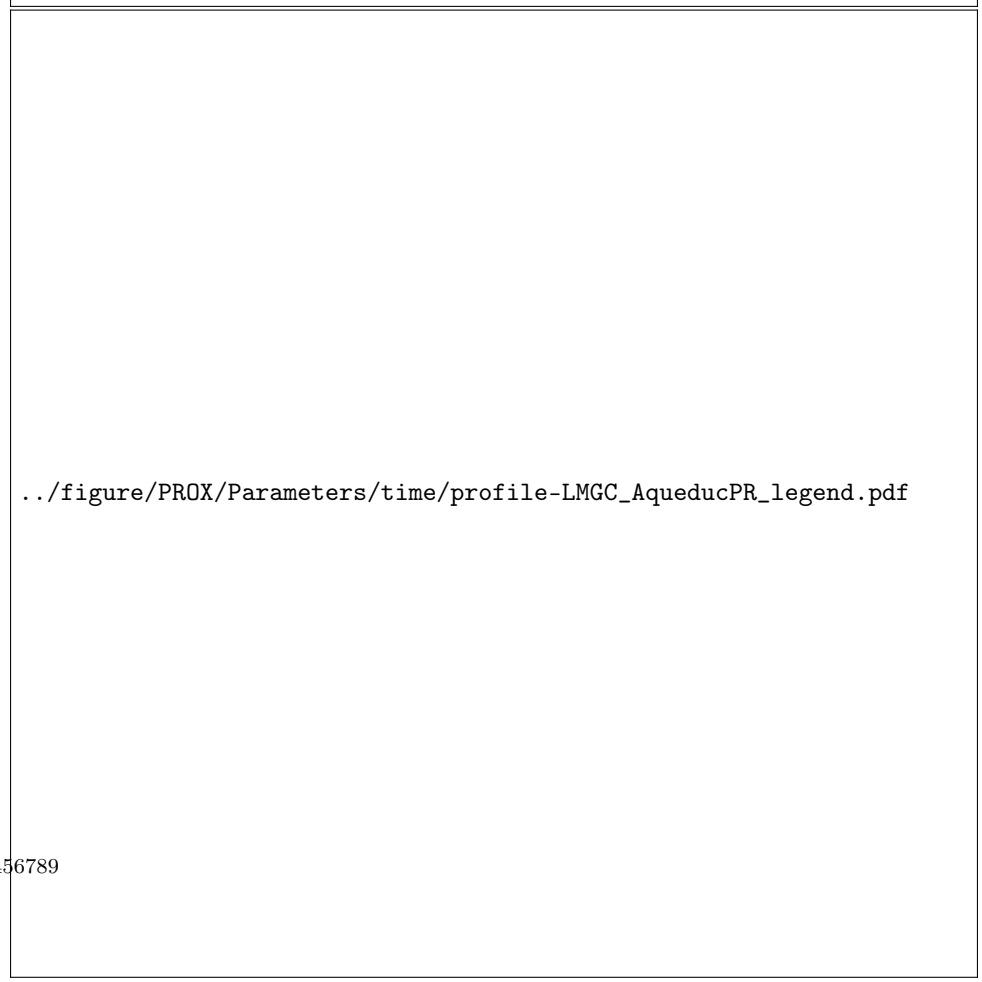
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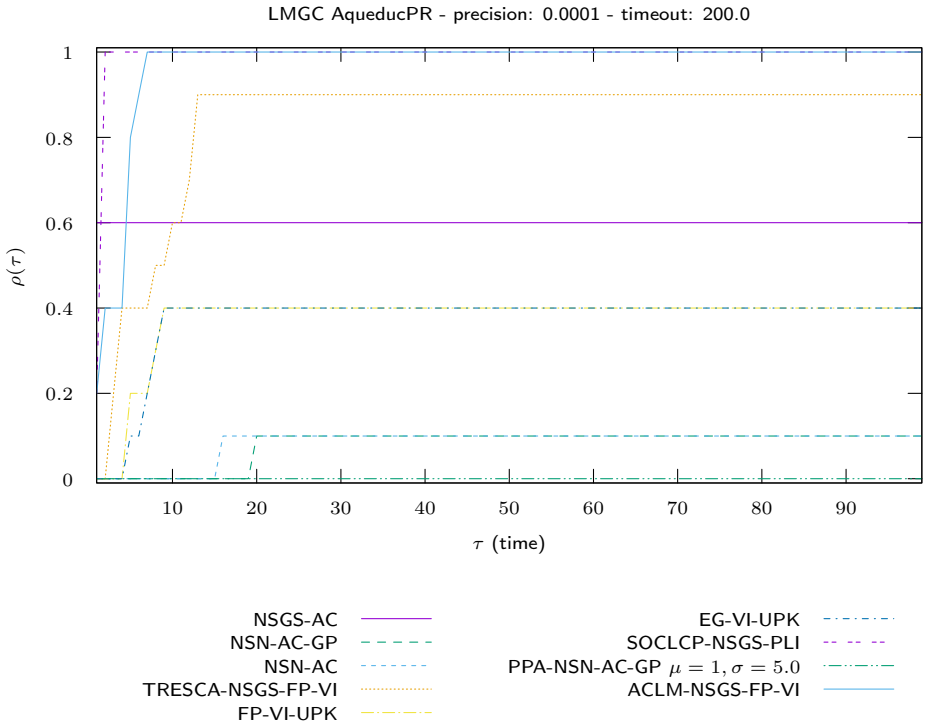


Figure 32: LMGC Aqueduc PR time COMP/large

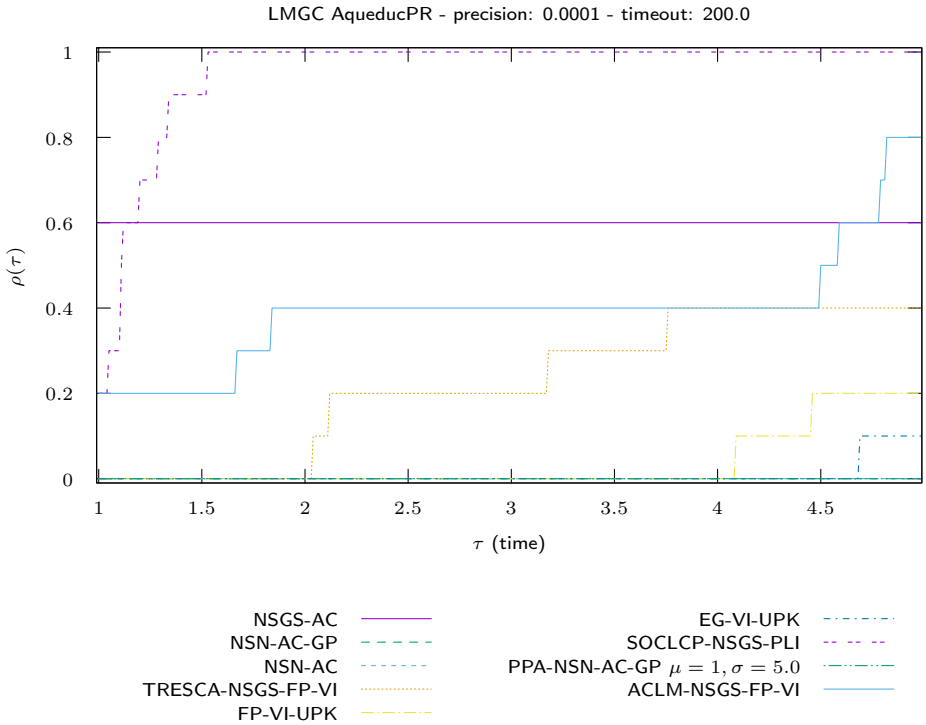


Figure 33: LMGC Aqueduc PR time COMP/large

4 LMGC Bridge PR

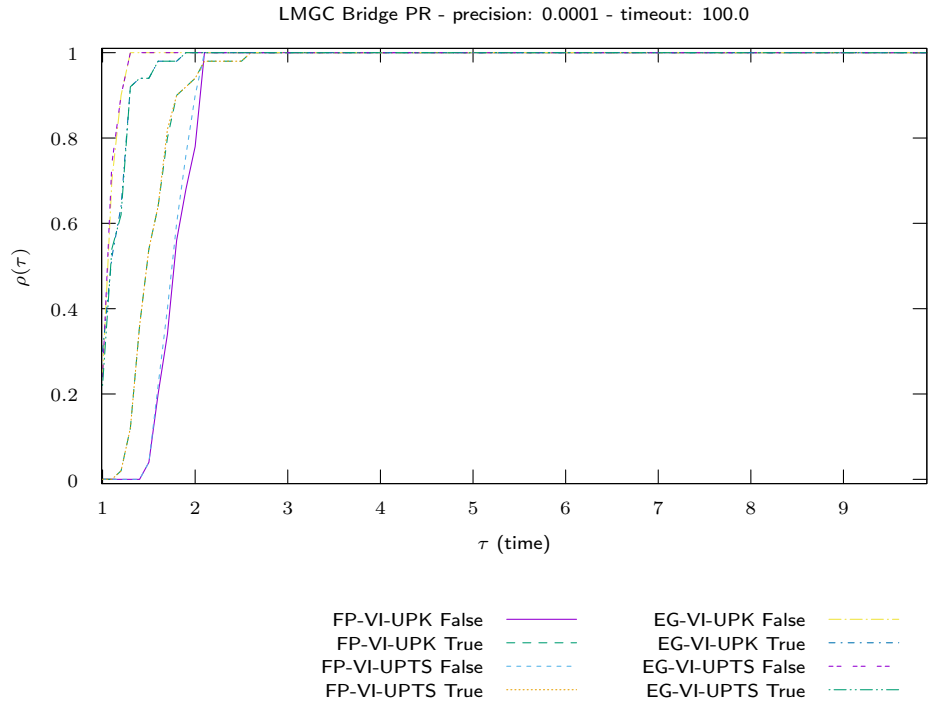


Figure 34: LMGC Bridge PR time VI/UpdateRule

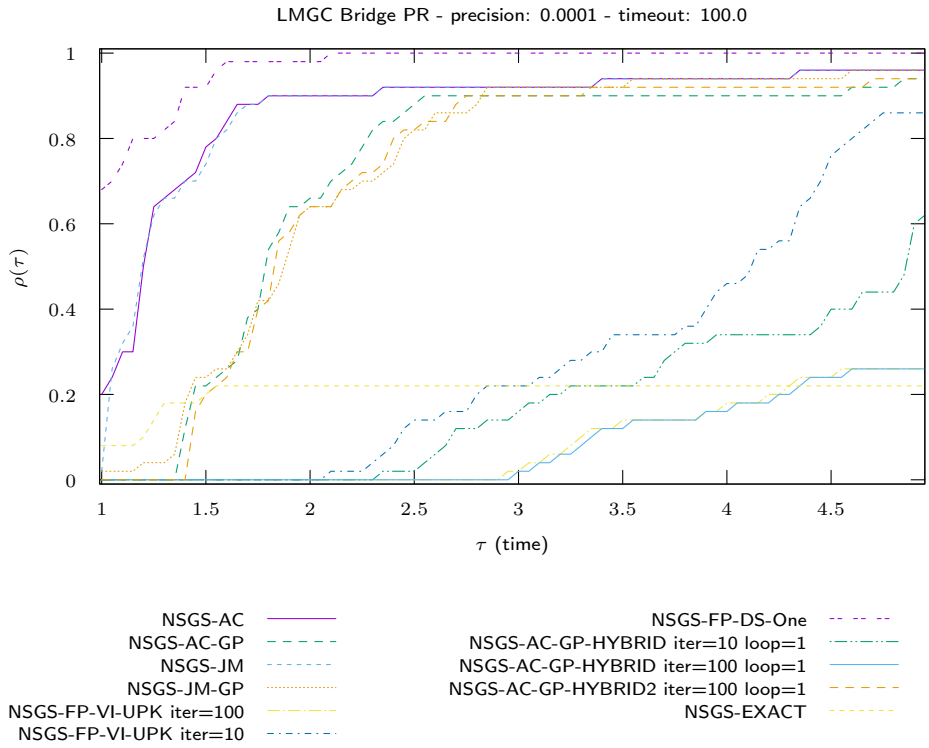


Figure 35: LMGC Bridge PR time NSGS/LocalSolver

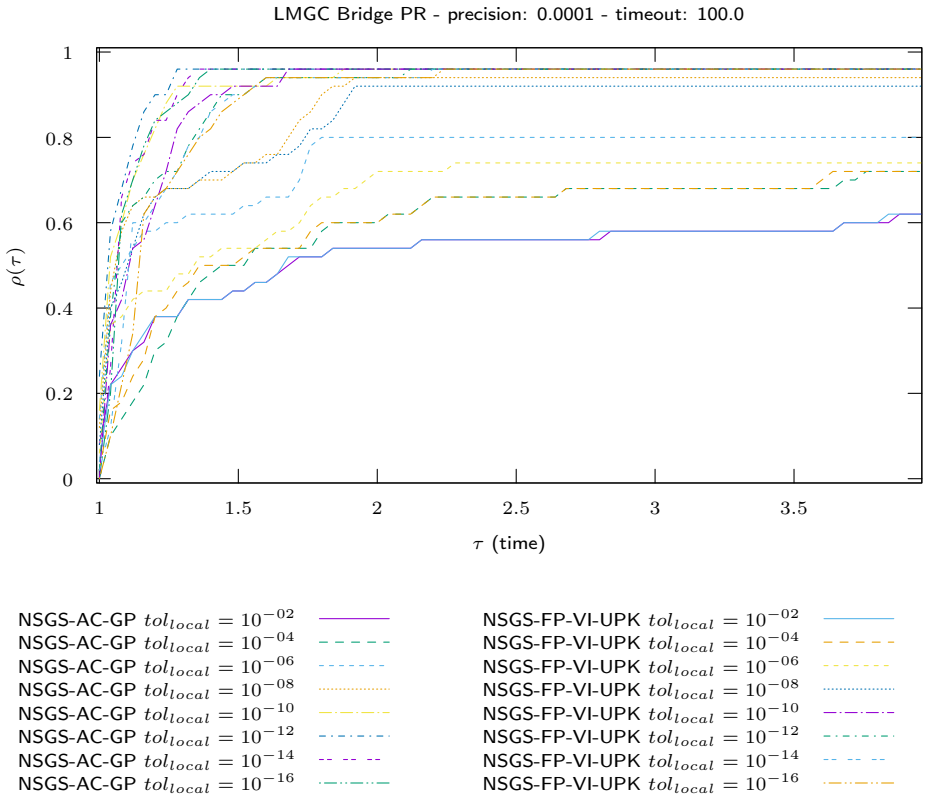


Figure 36: LMGC Bridge PR time NSGS/LocalTol

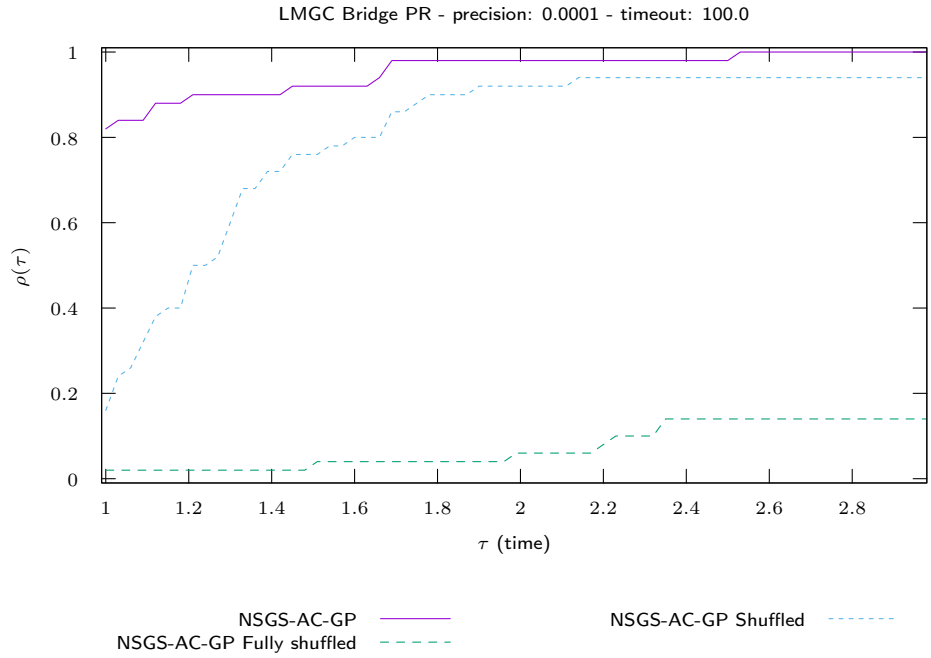


Figure 37: LMGC Bridge PR time NSGS/Shuffled

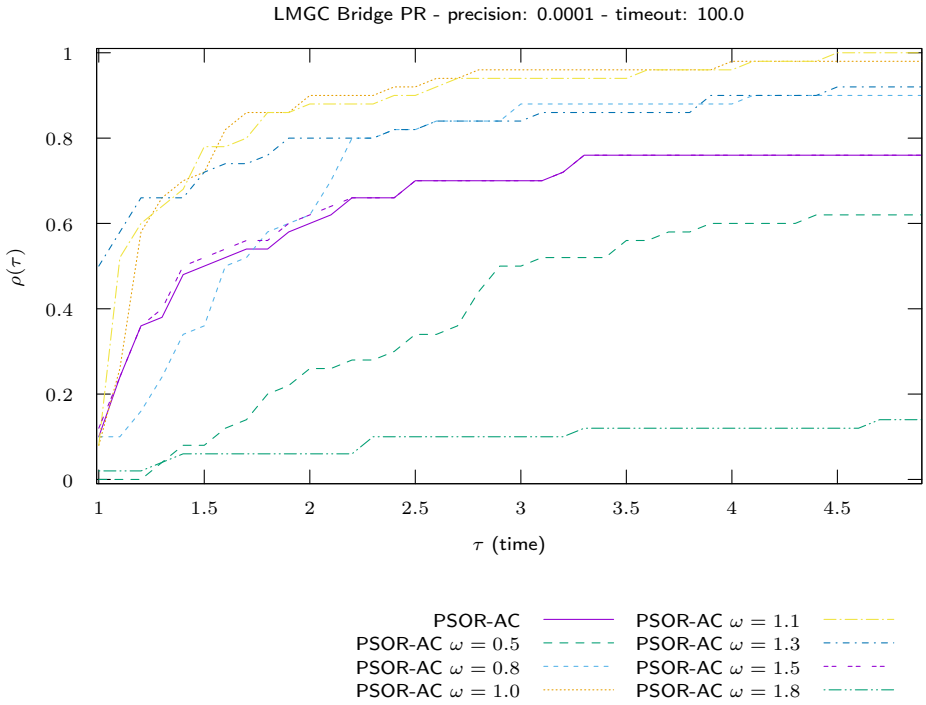


Figure 38: LMGC Bridge PR time PSOR

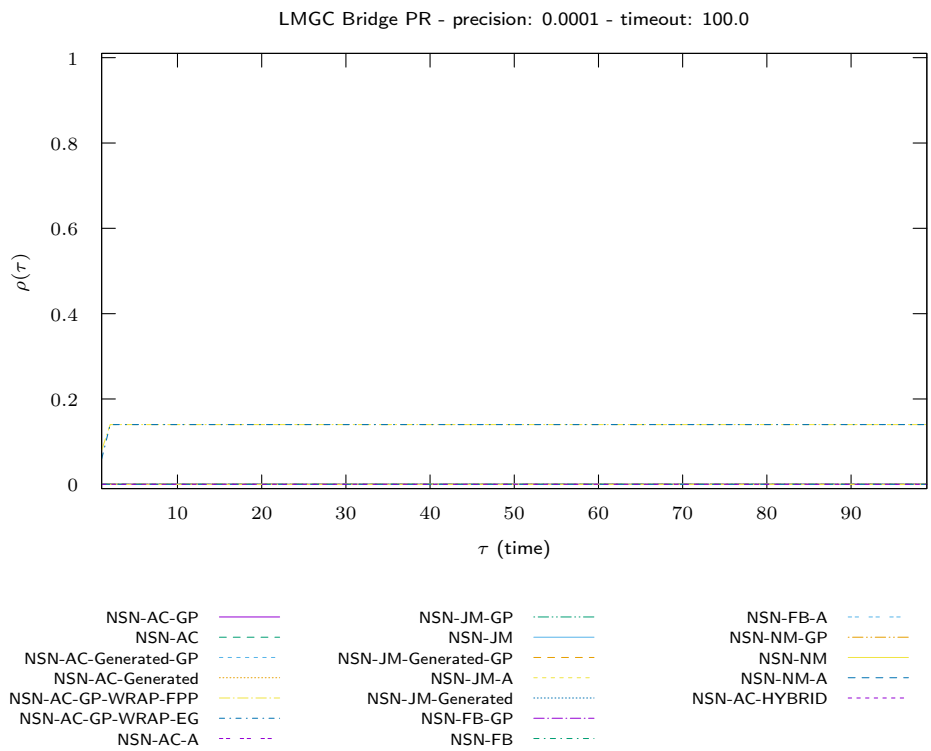


Figure 39: LMGC Bridge PR time NSN

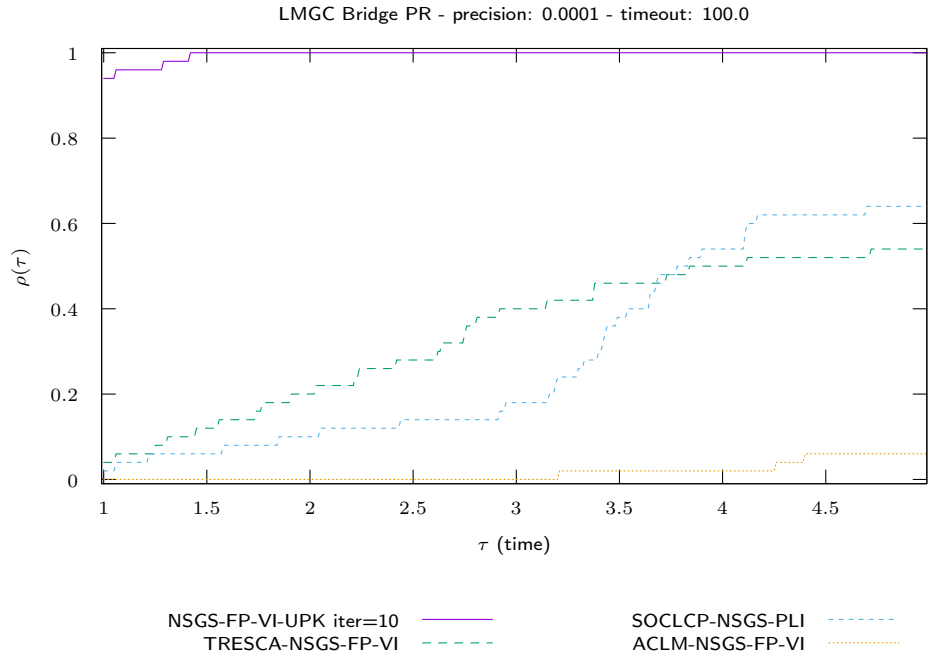


Figure 40: LMGC Bridge PR time OPTI

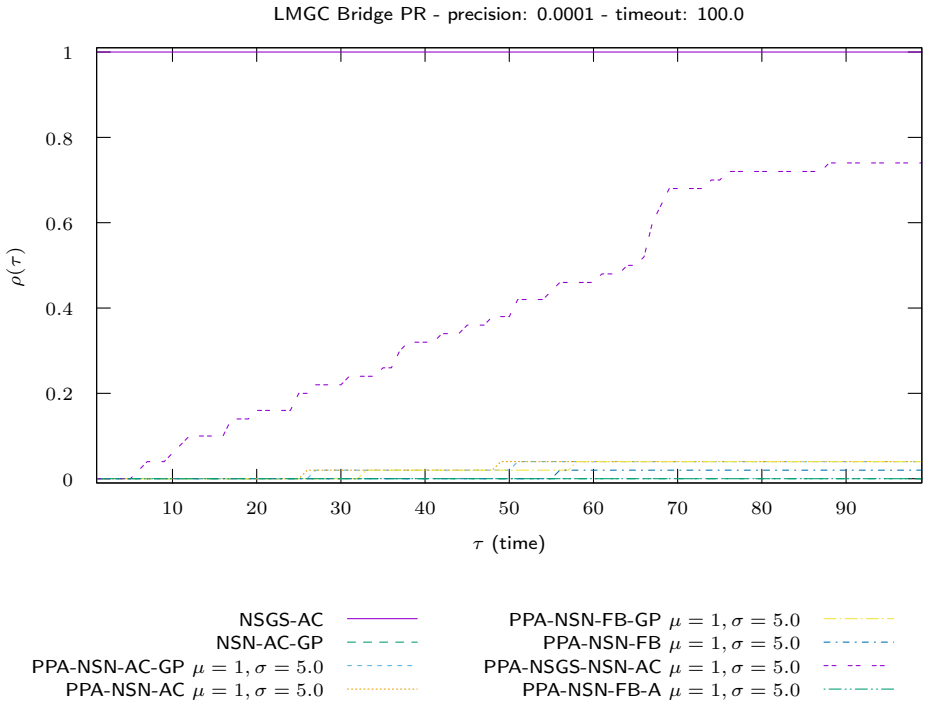
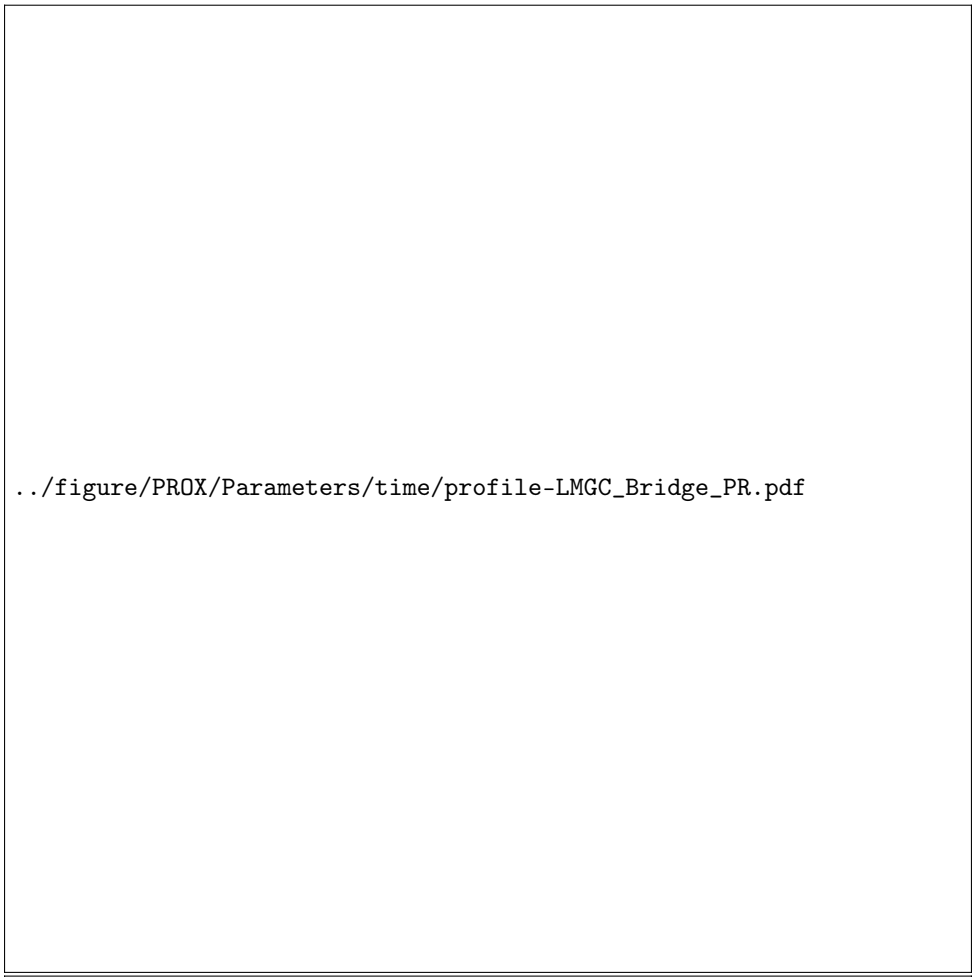


Figure 41: LMGC Bridge PR time PROX/InternalSolvers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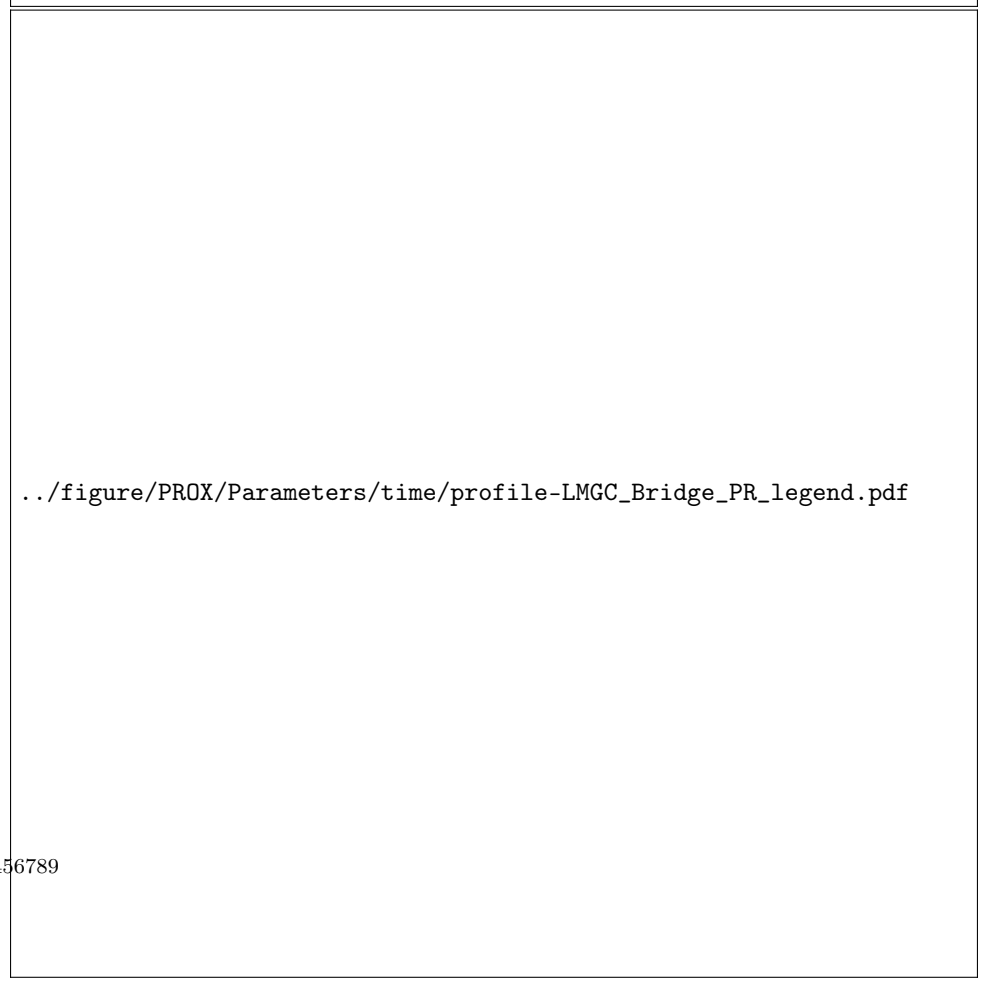

../figure/PROX/Parameters/time/profile-LMGC_Bridge_PR_legend.pdf

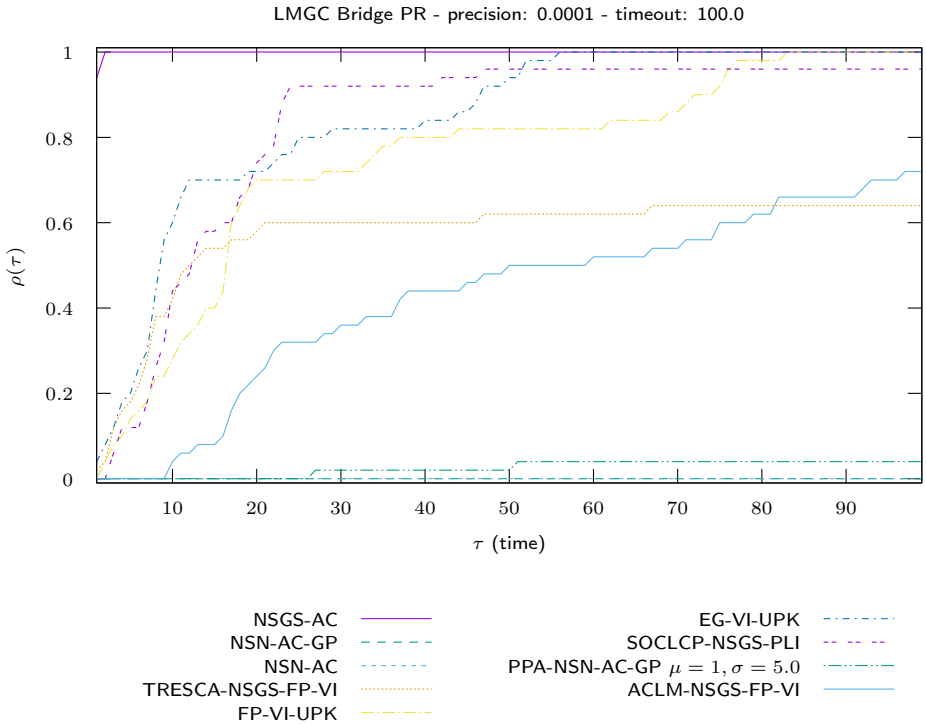


Figure 43: LMGC Bridge PR time COMP/large

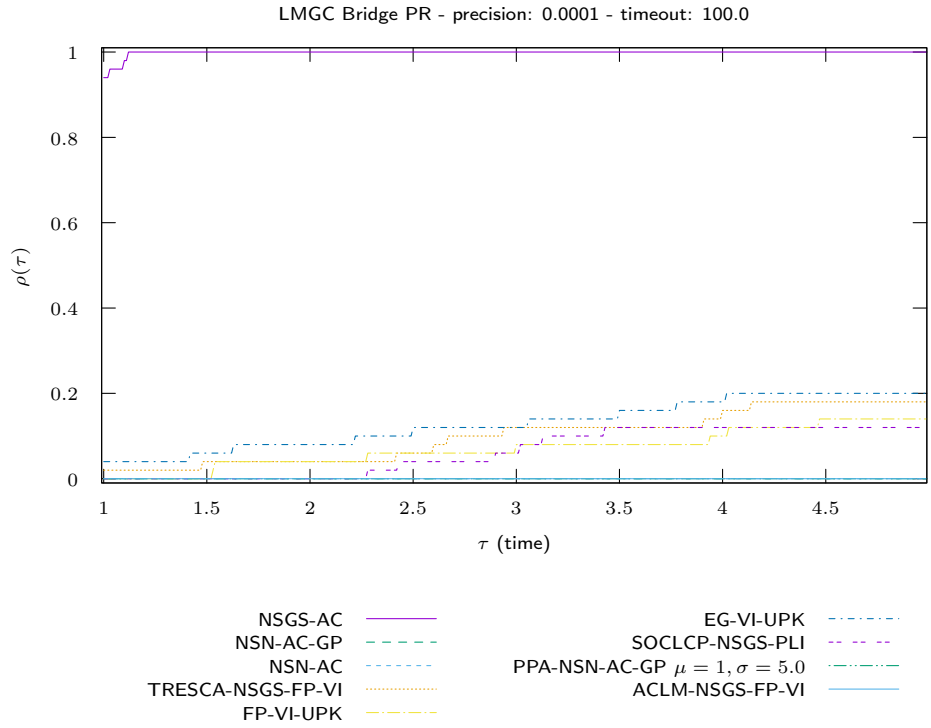
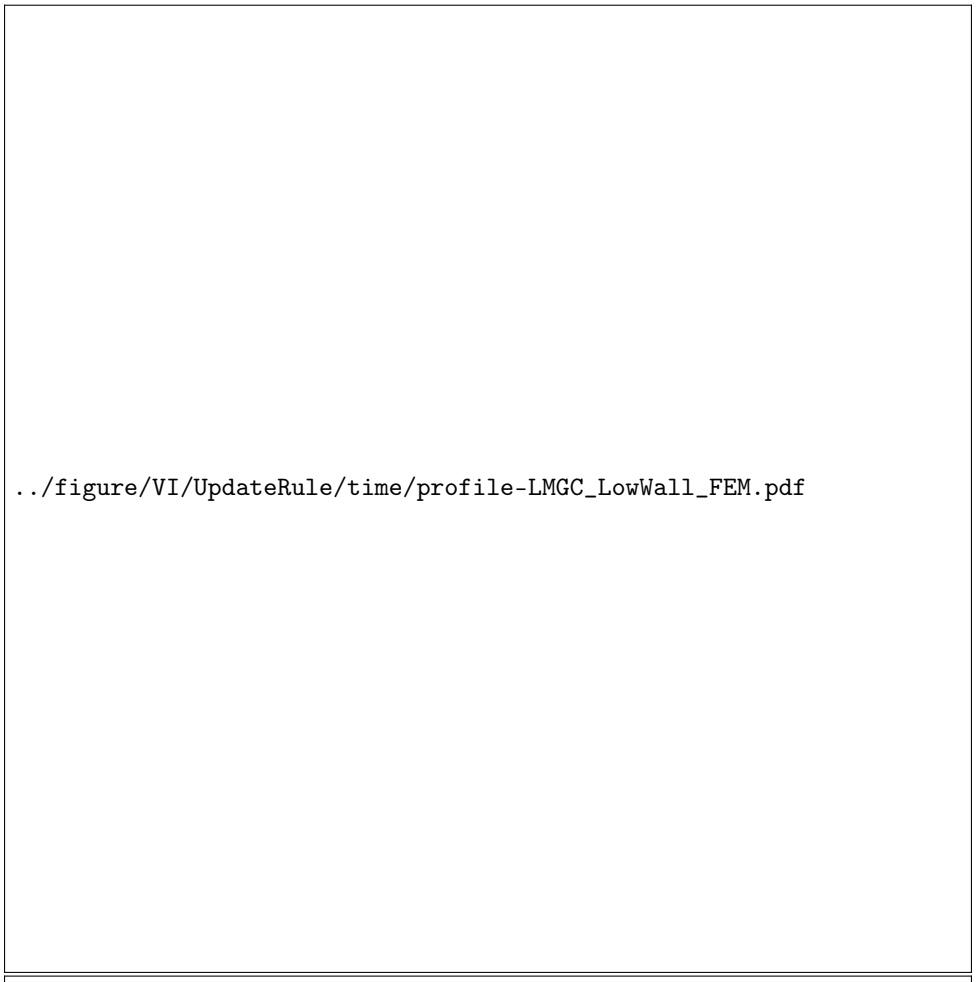


Figure 44: LMGC Bridge PR time COMP/large

5 LMGC LowWall FEM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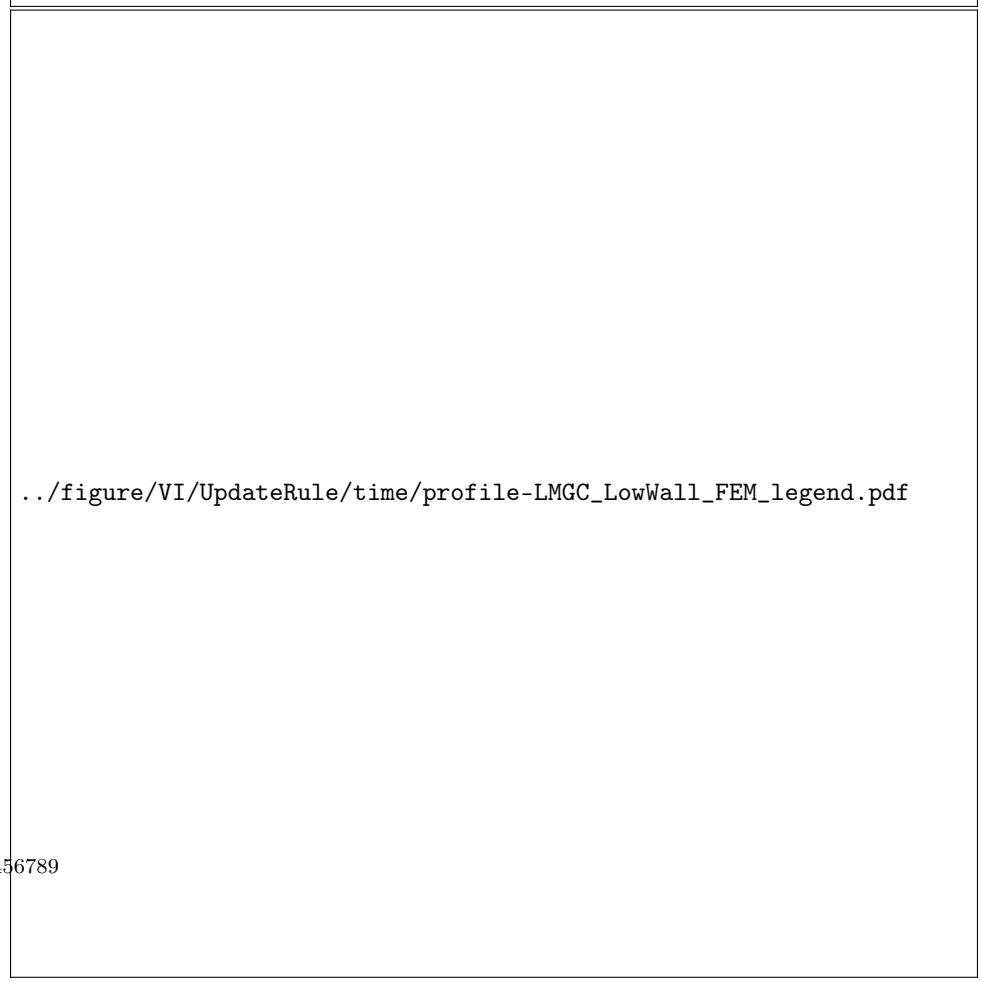
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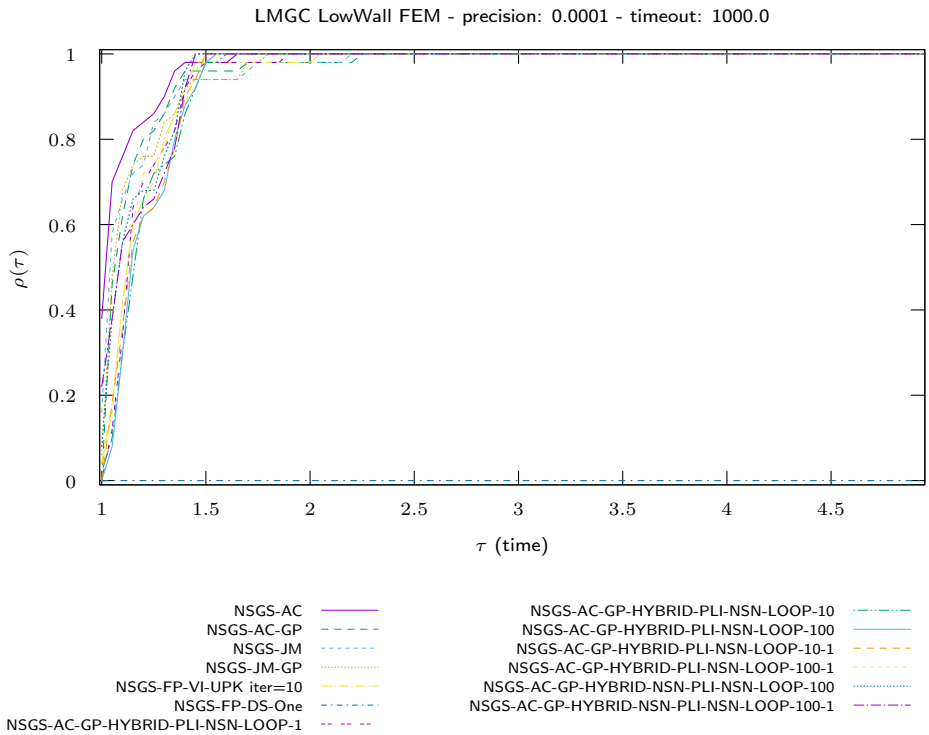
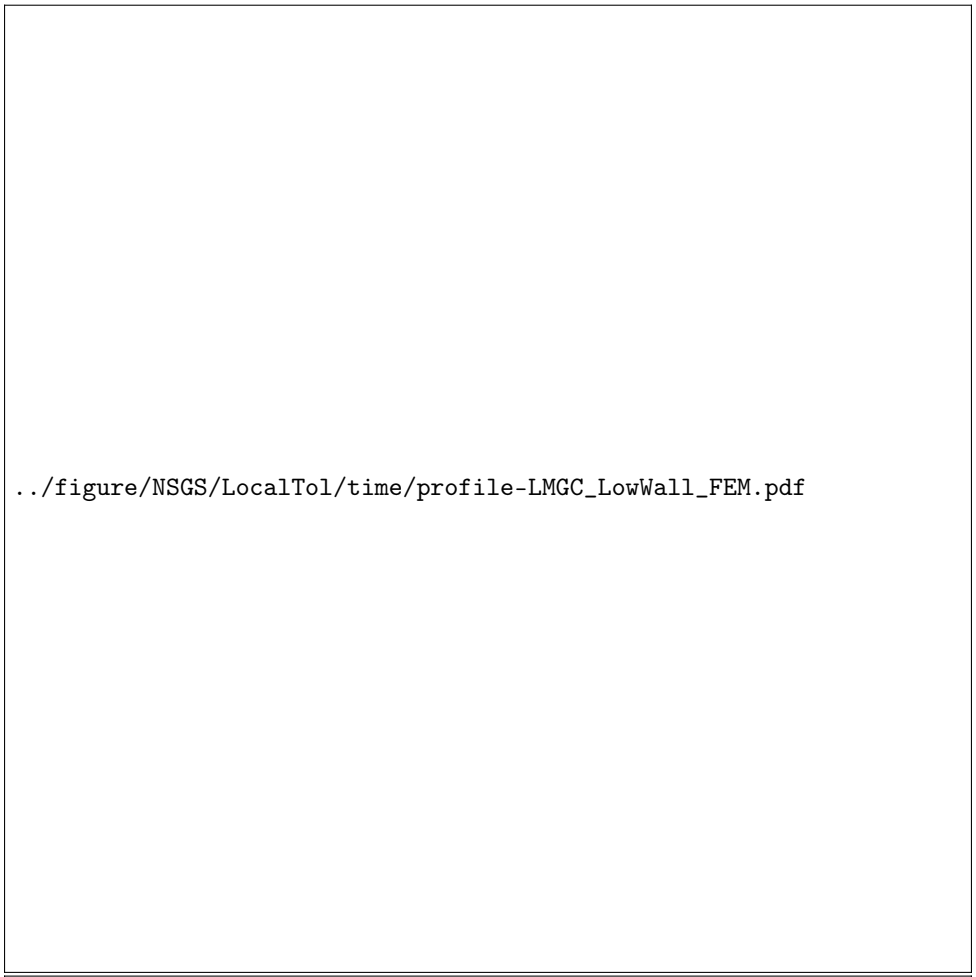


Figure 46: LMGC LowWall FEM time NSGS/LocalSolver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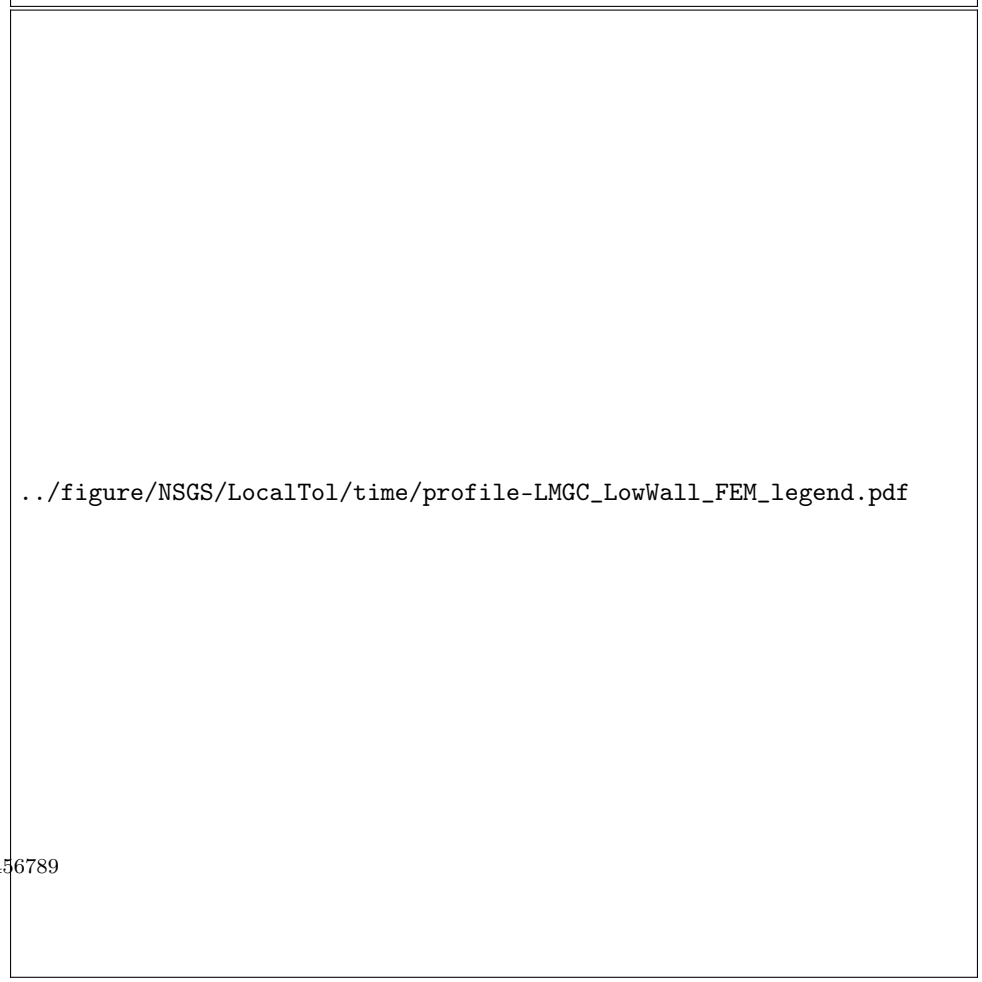
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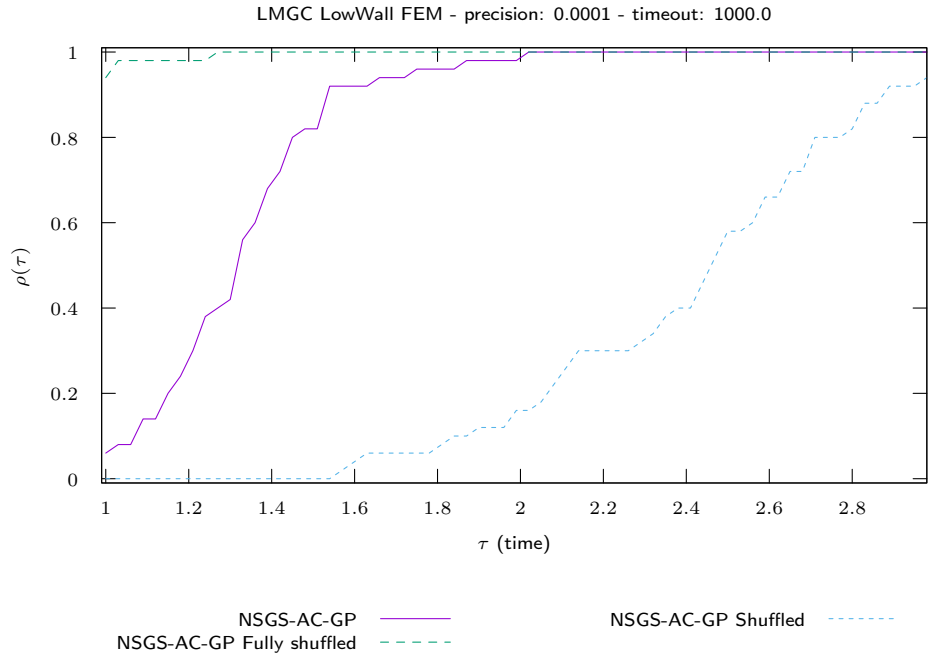


Figure 48: LMGC LowWall FEM time NSGS/Shuffled

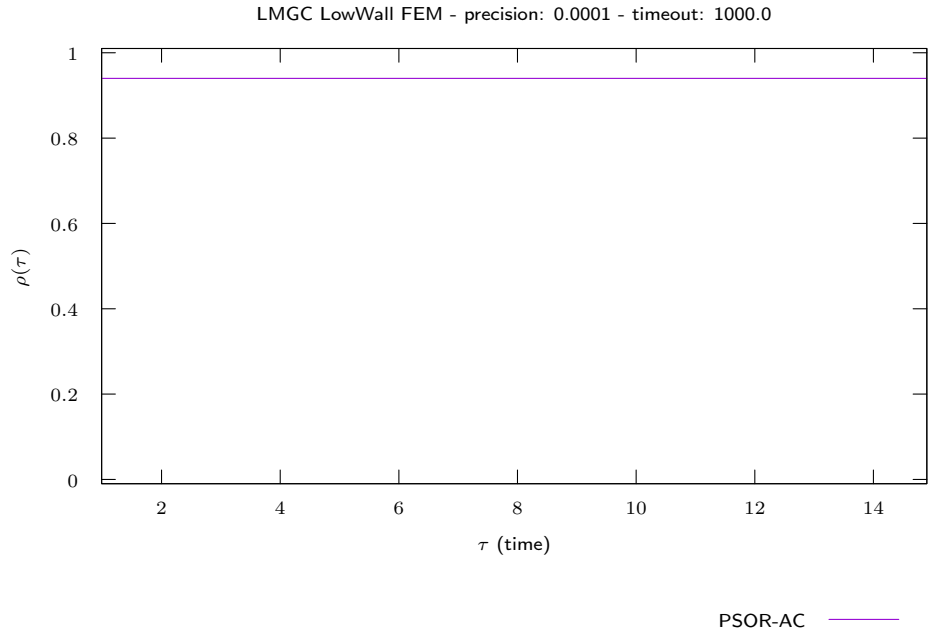


Figure 49: LMGC LowWall FEM time PSOR

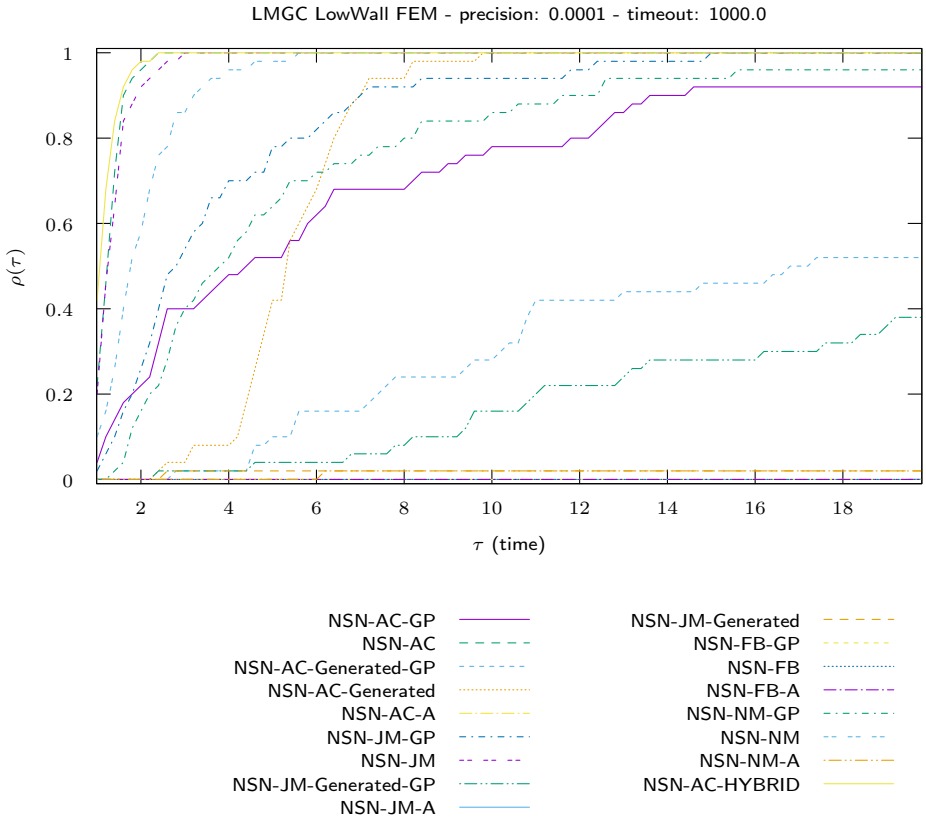


Figure 50: LMGC LowWall FEM time NSN

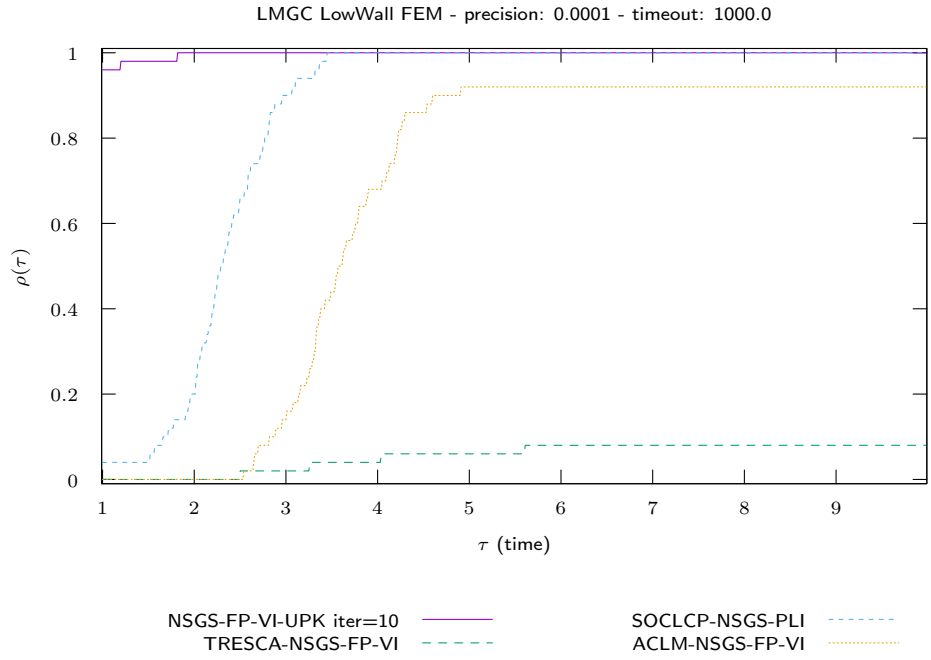


Figure 51: LMGC LowWall FEM time OPTI

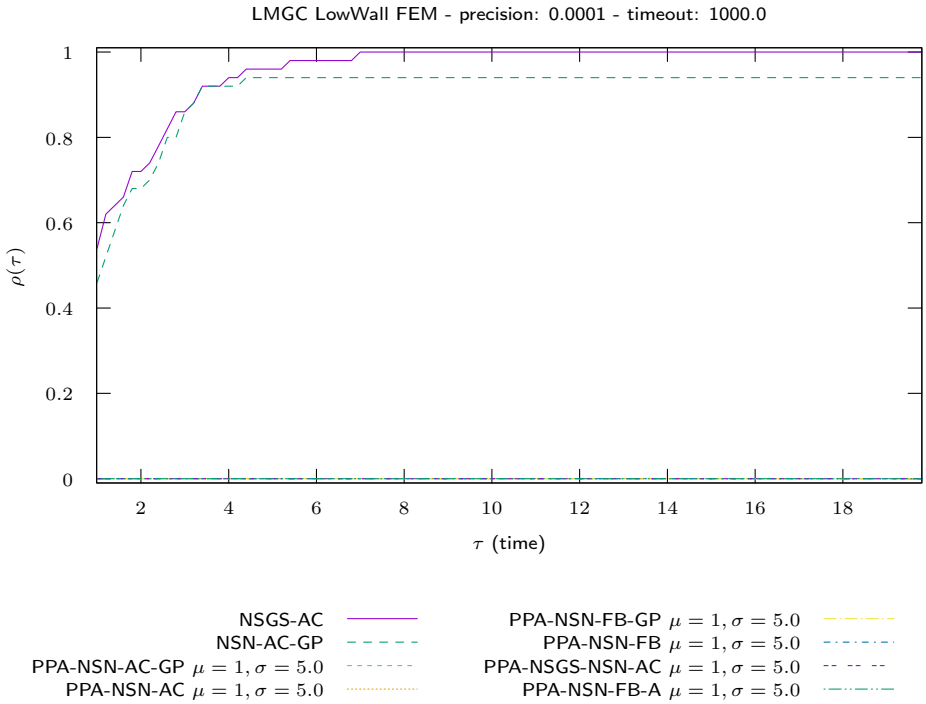
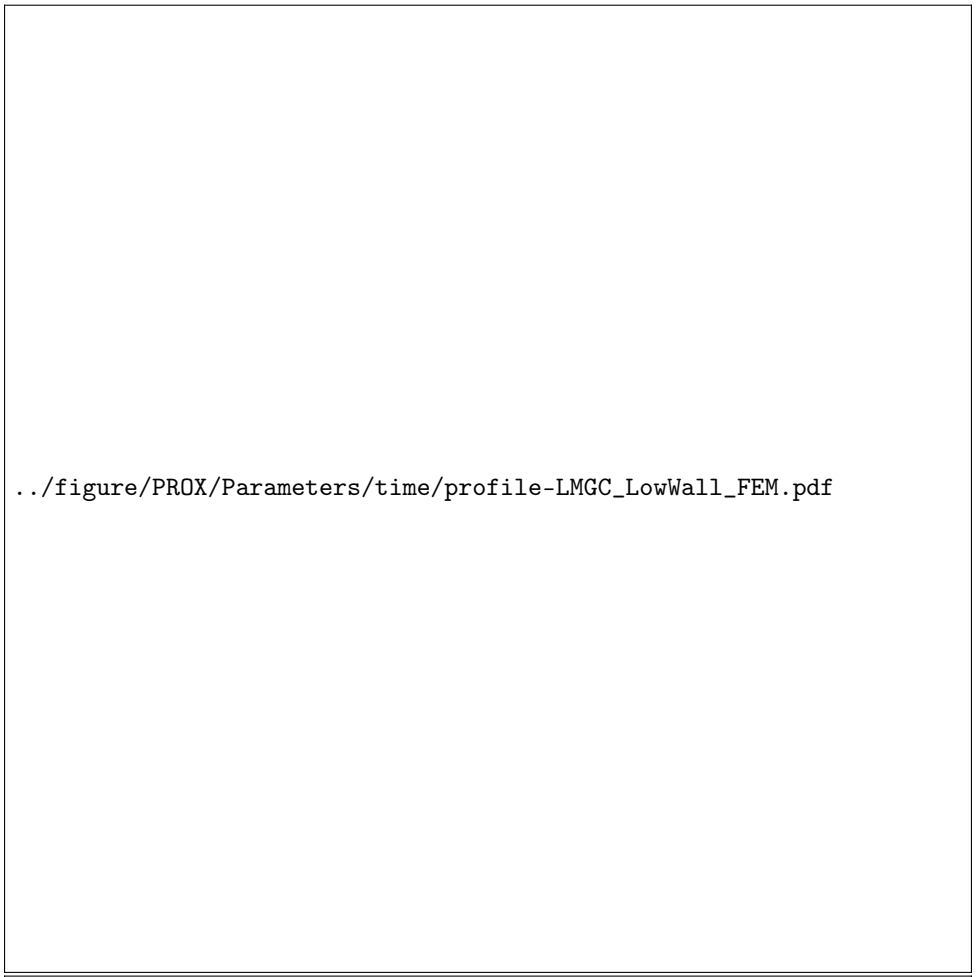
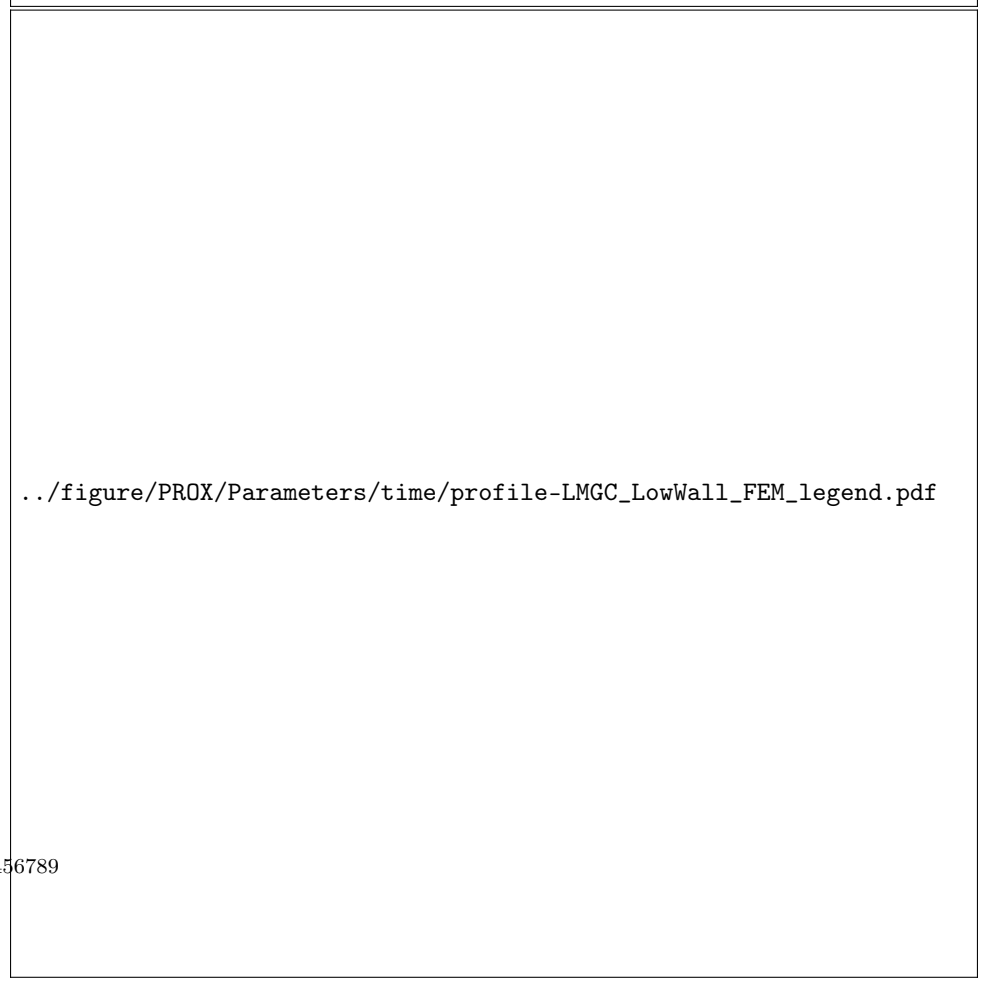


Figure 52: LMGC LowWall FEM time PROX/InternalSolvers


../figure/PROX/Parameters/time/profile-LMGC_LowWall_FEM.pdf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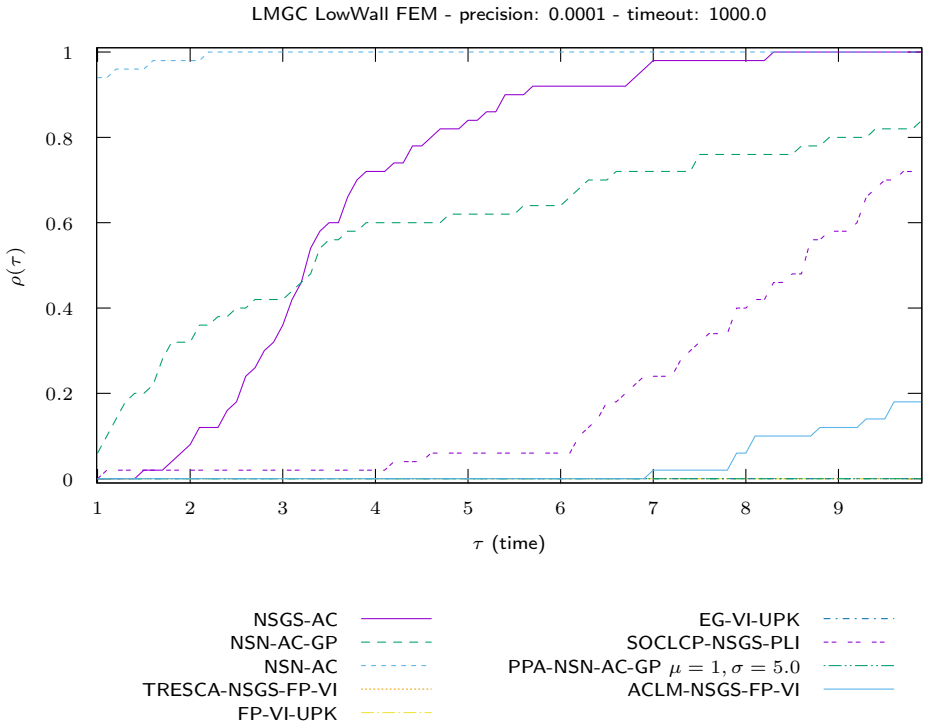


Figure 54: LMGC LowWall FEM time COMP/large

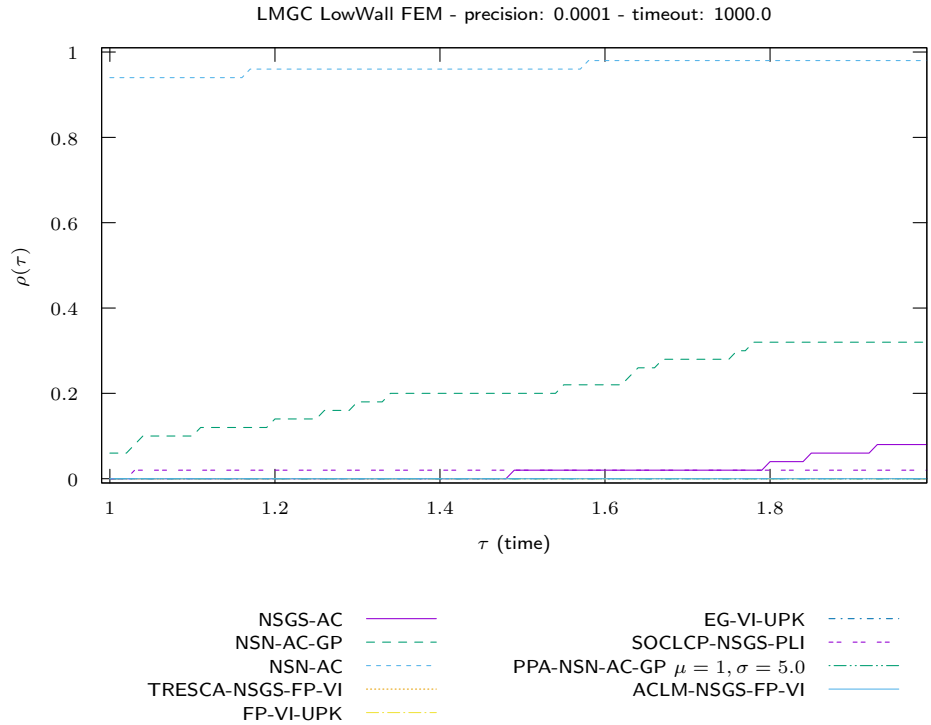


Figure 55: LMGC LowWall FEM time COMP/large

6 LMGC Cubes H8

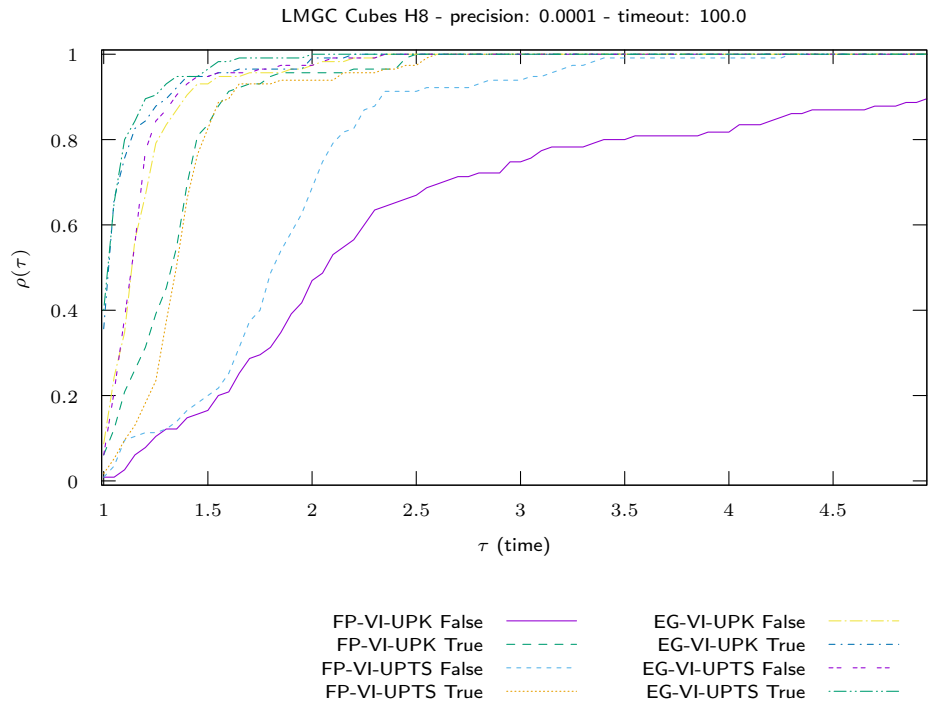


Figure 56: LMGC Cubes H8 time VI/UpdateRule

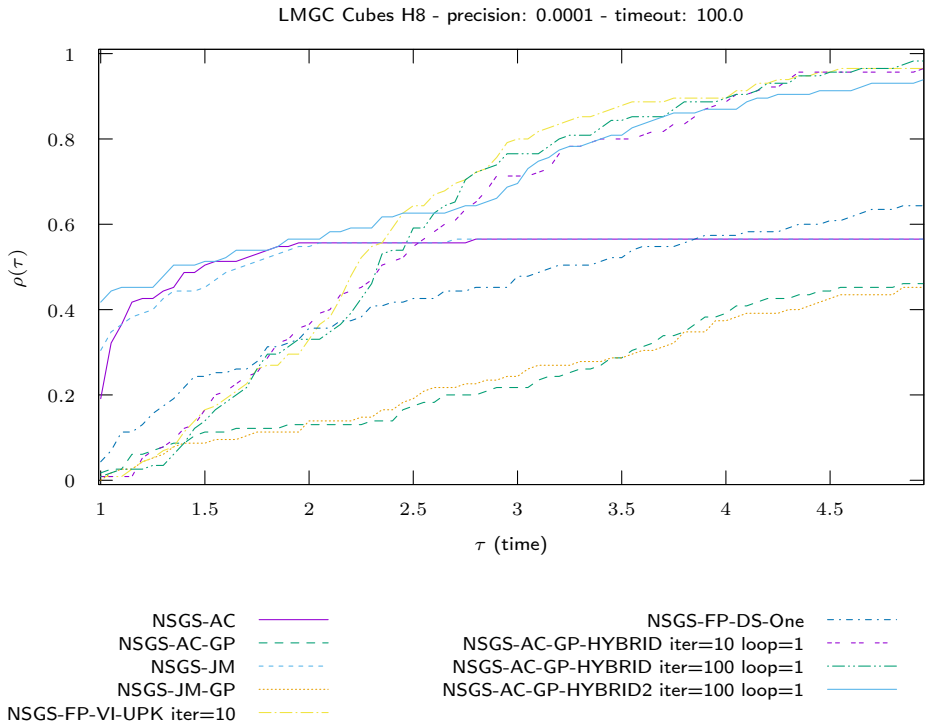


Figure 57: LMGC Cubes H8 time NSGS/LocalSolver

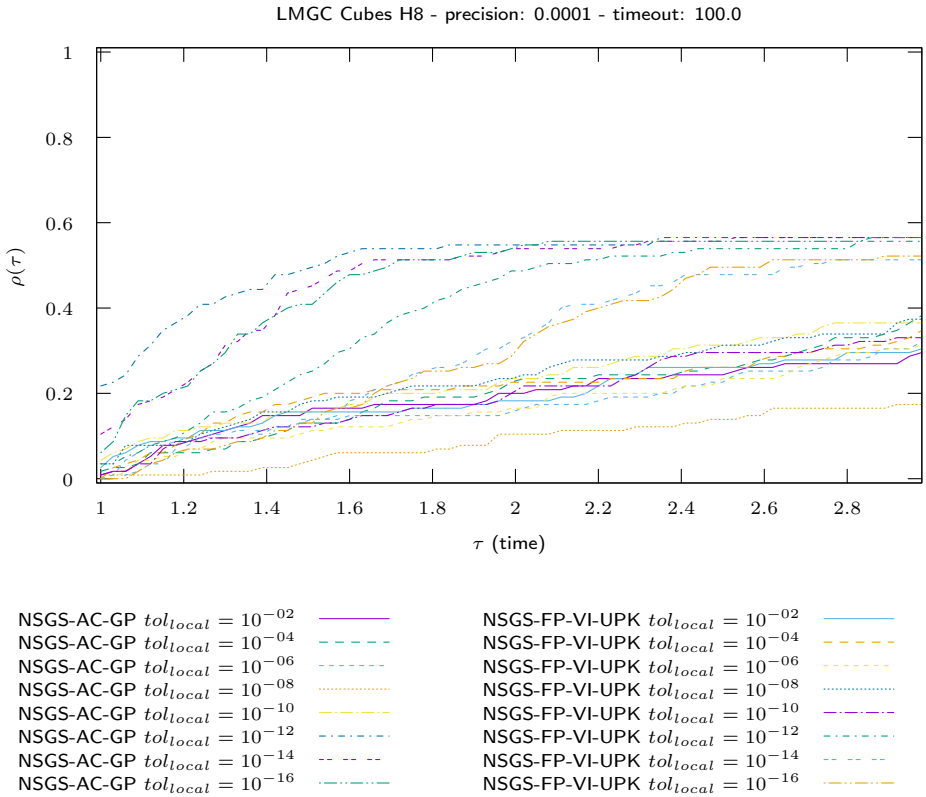


Figure 58: LMGC Cubes H8 time NSGS/LocalTol

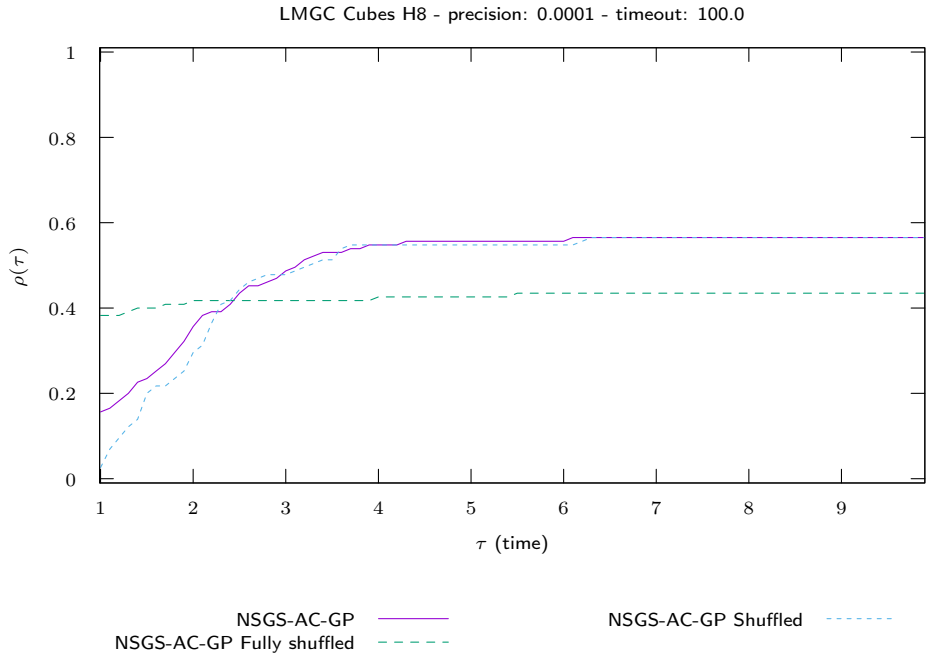


Figure 59: LMGC Cubes H8 time NSGS/Shuffled

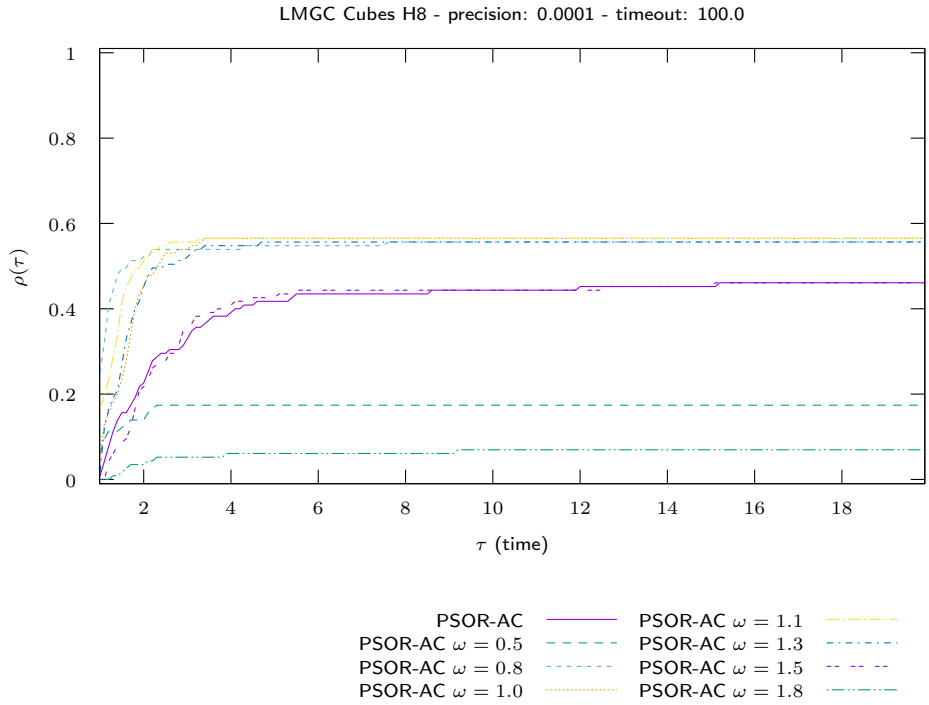


Figure 60: LMGC Cubes H8 time PSOR

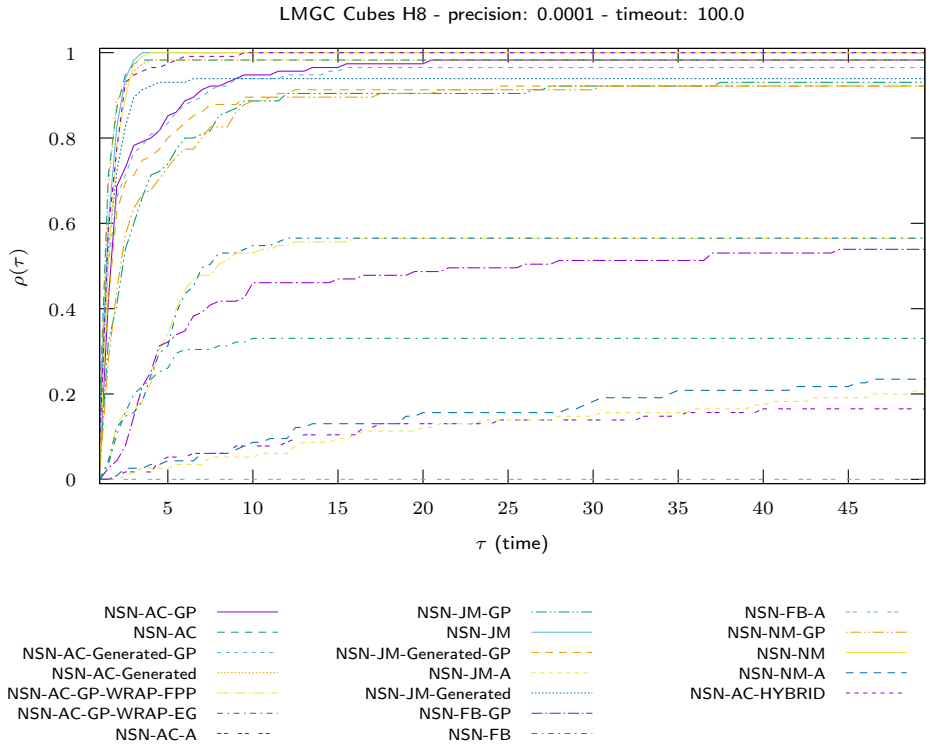


Figure 61: LMGC Cubes H8 time NSN

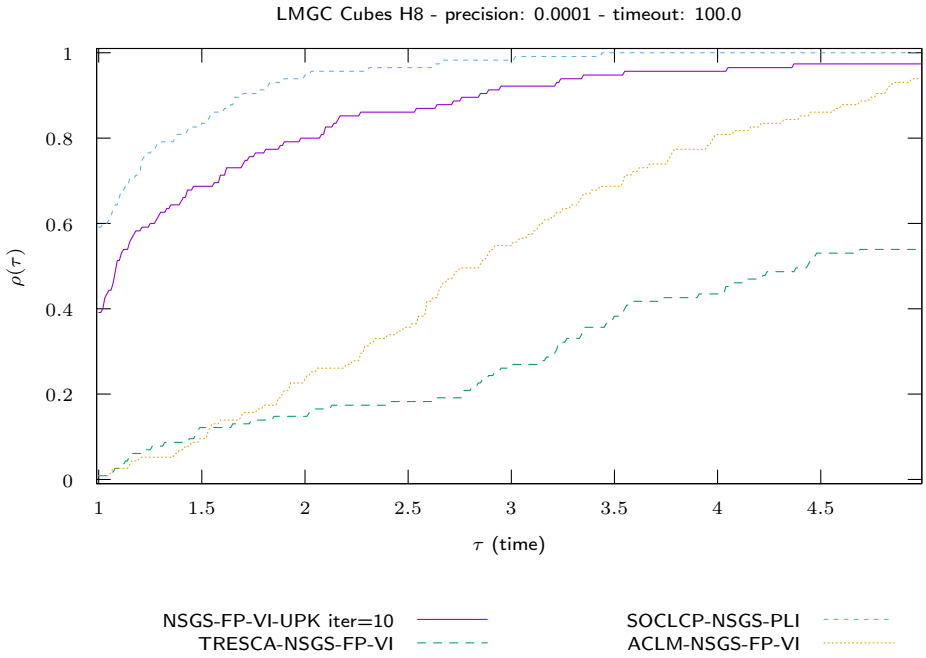


Figure 62: LMGC Cubes H8 time OPTI

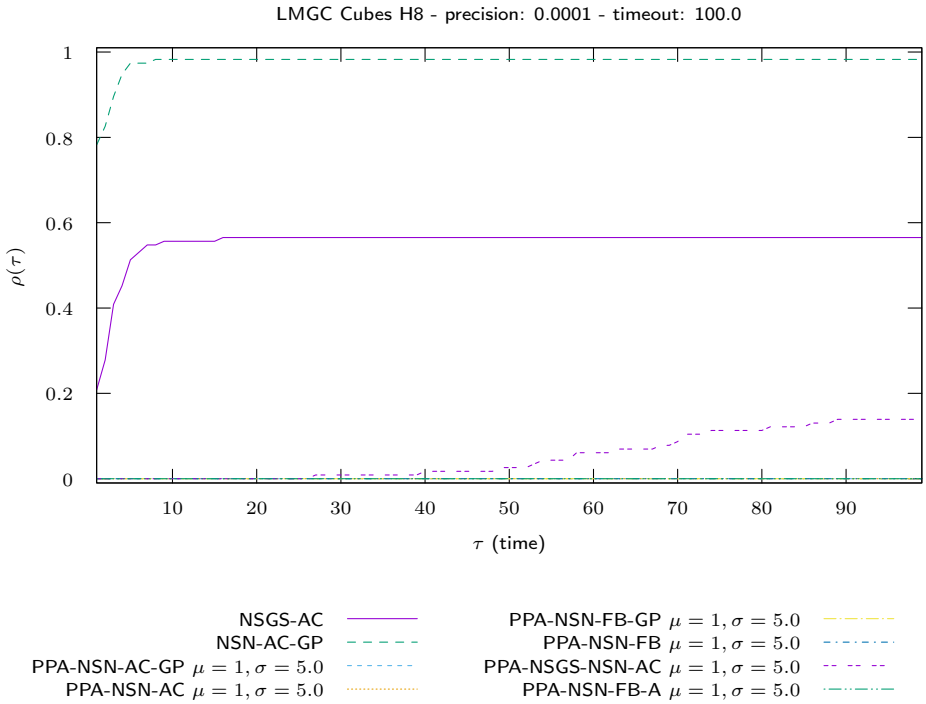
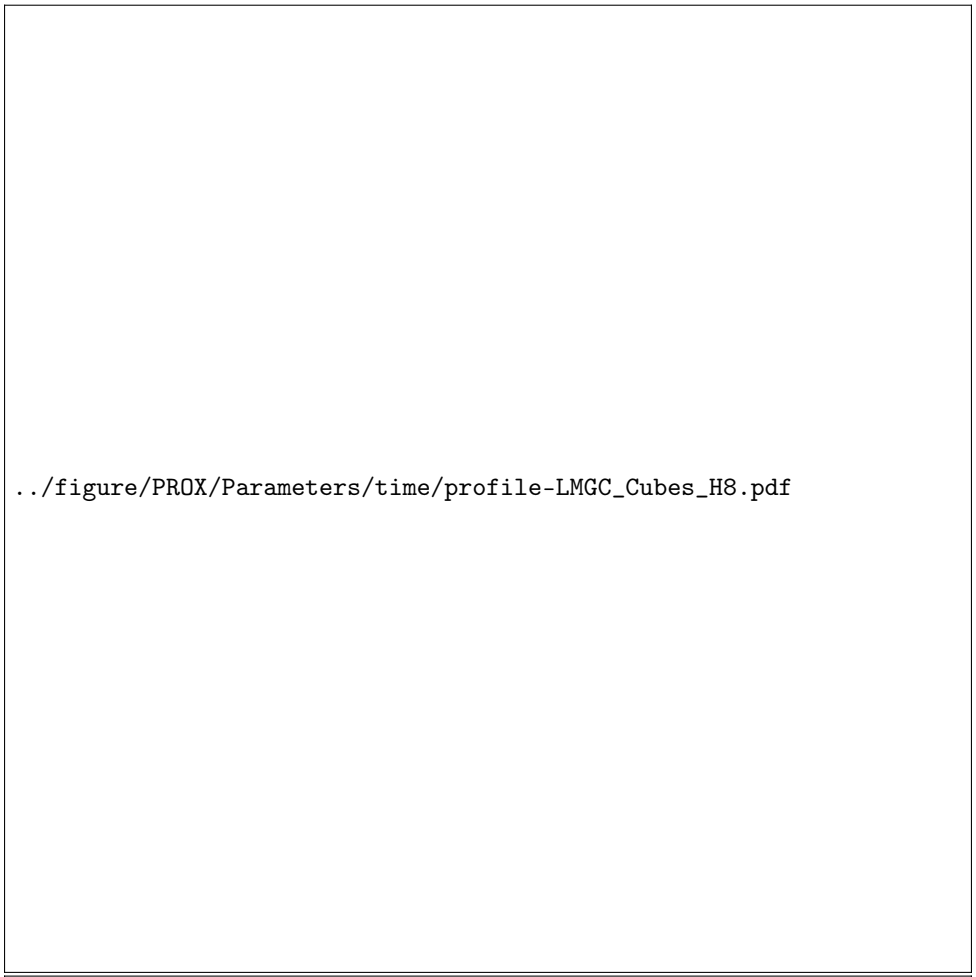


Figure 63: LMGC Cubes H8 time PROX/InternalSolvers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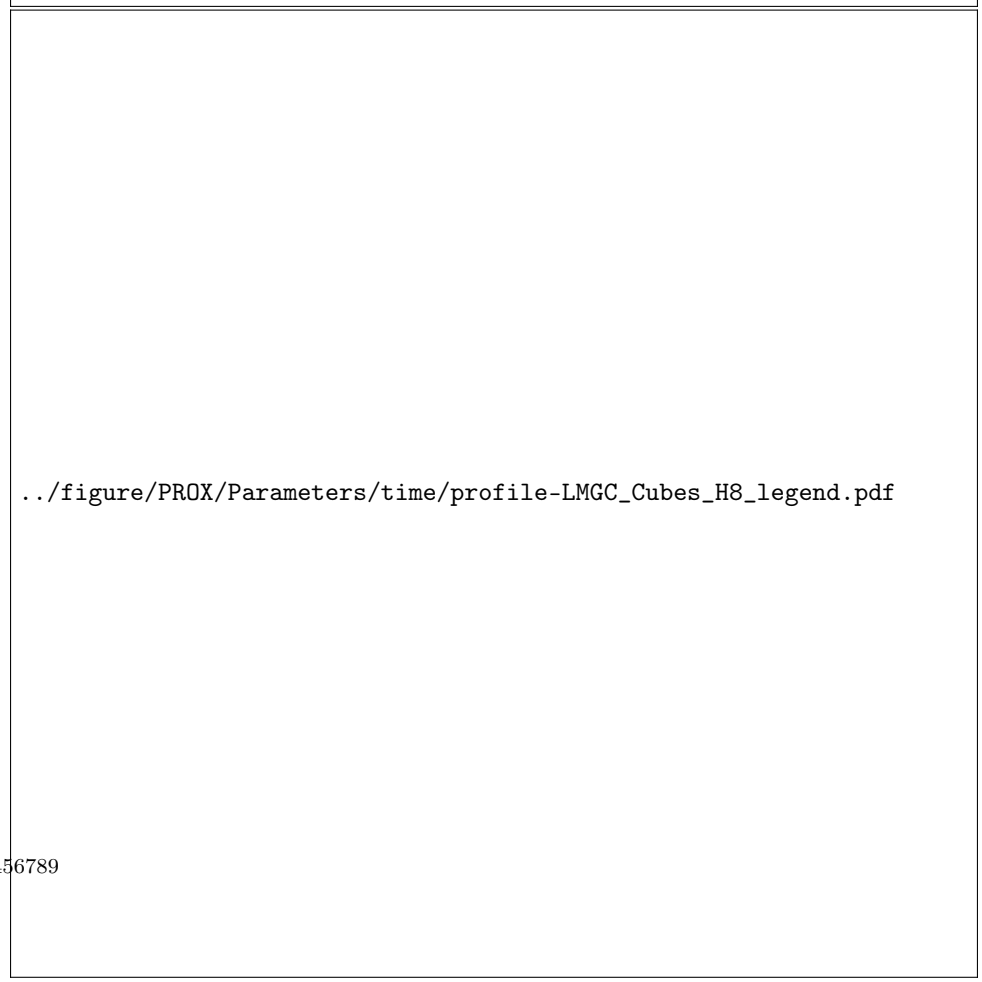
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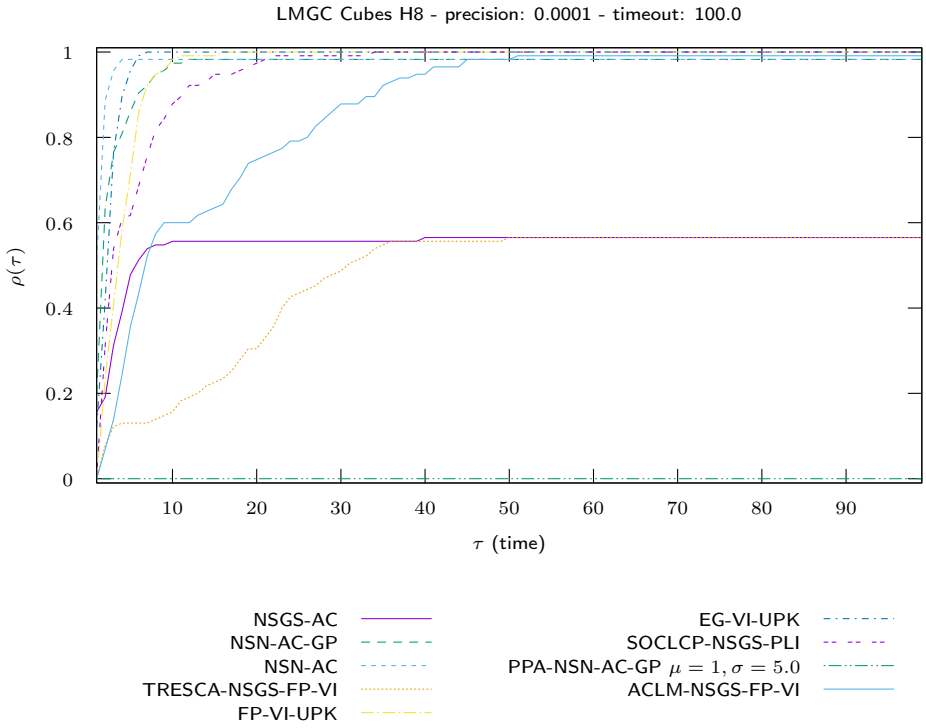


Figure 65: LMGC Cubes H8 time COMP/large

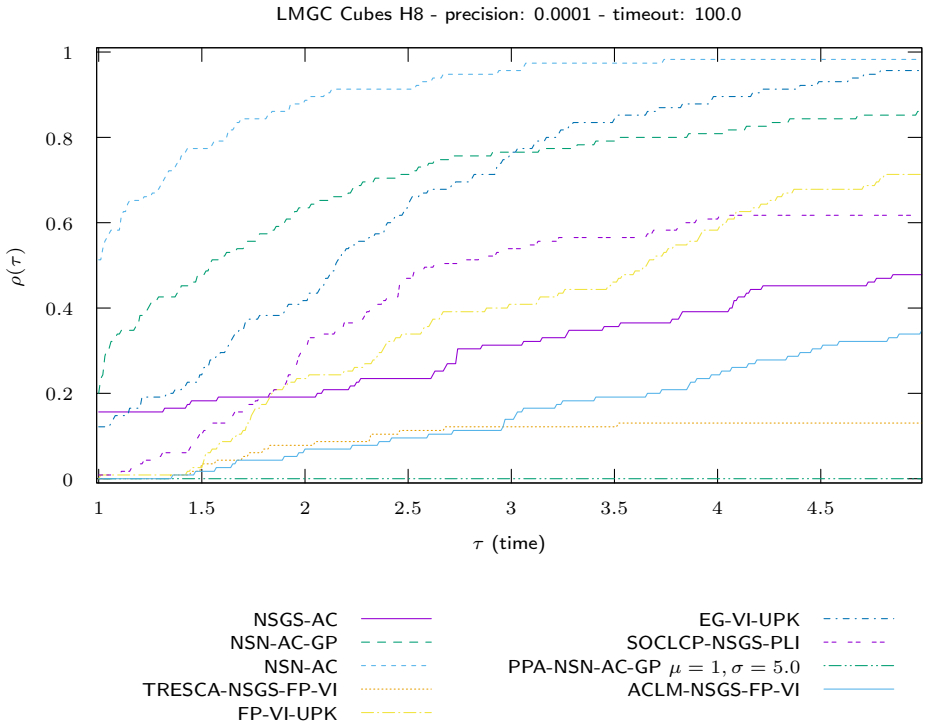


Figure 66: LMGC Cubes H8 time COMP/large

7 Capsules

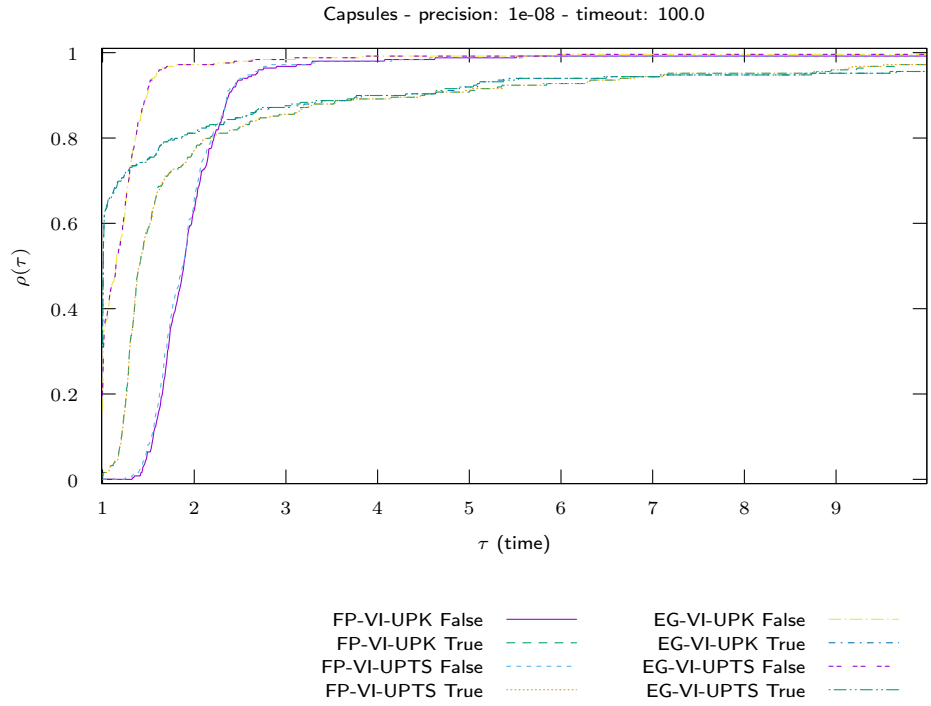


Figure 67: Capsules time VI/UpdateRule

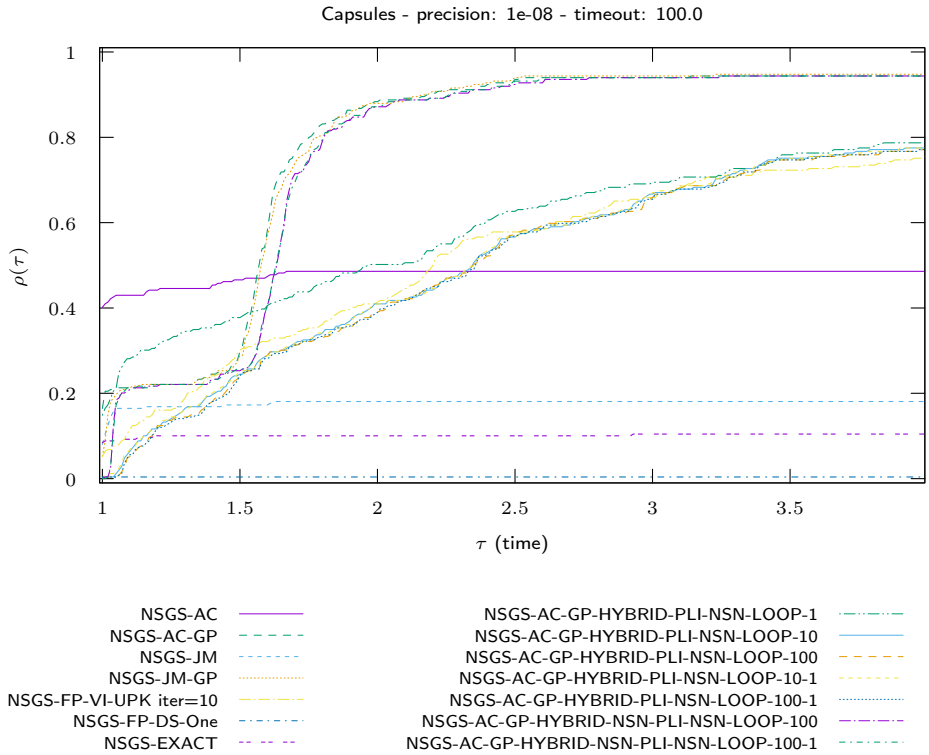


Figure 68: Capsules time NSGS/LocalSolver

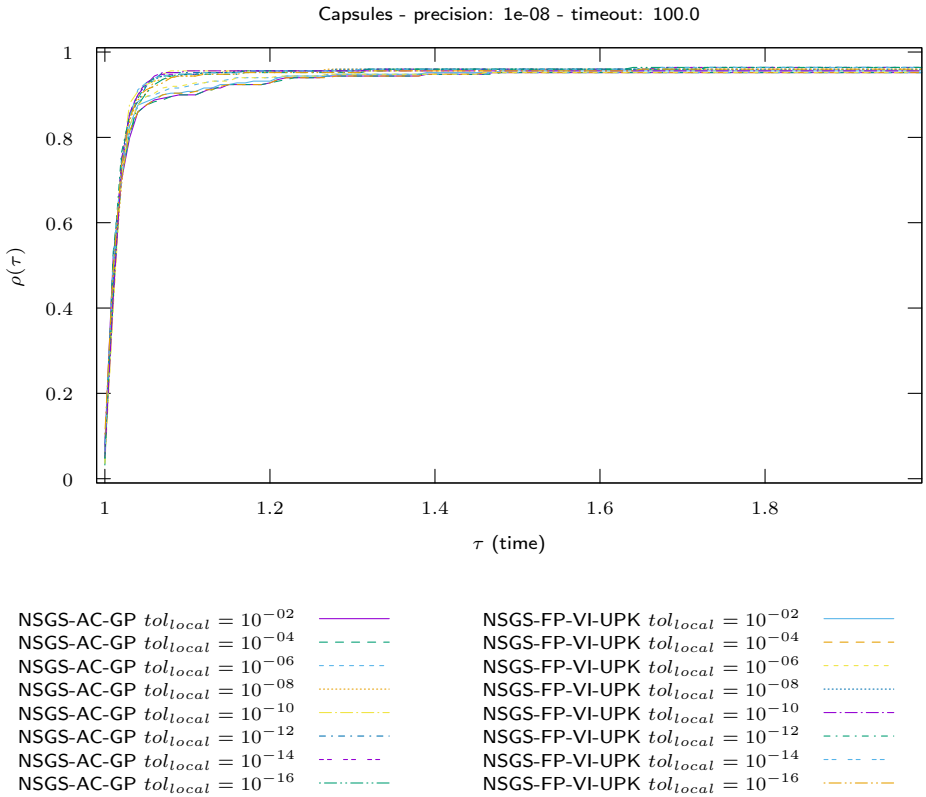


Figure 69: Capsules time NSGS/LocalTol

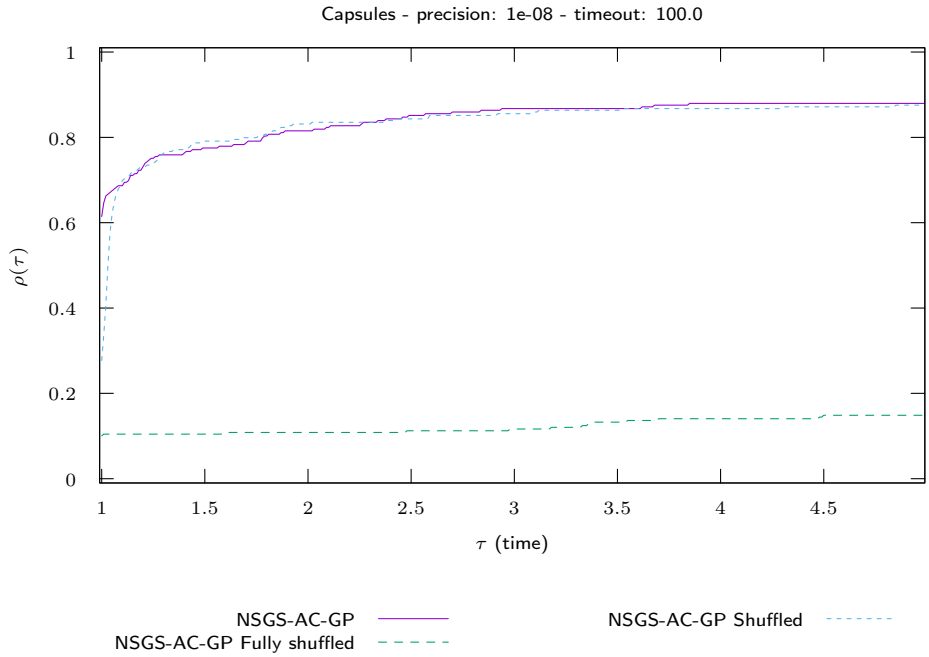


Figure 70: Capsules time NSGS/Shuffled

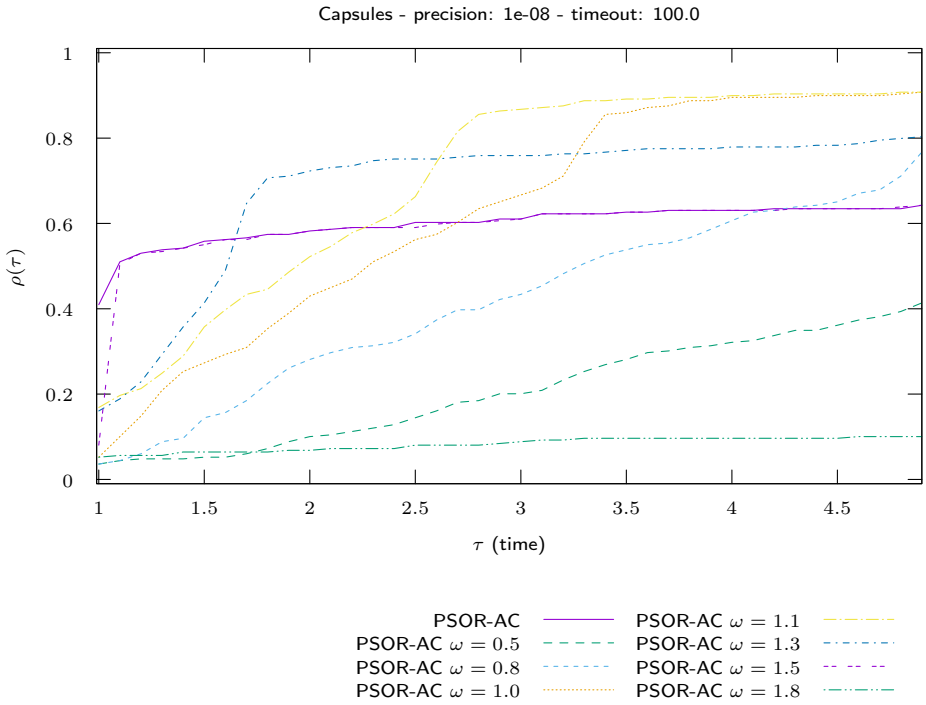


Figure 71: Capsules time PSOR

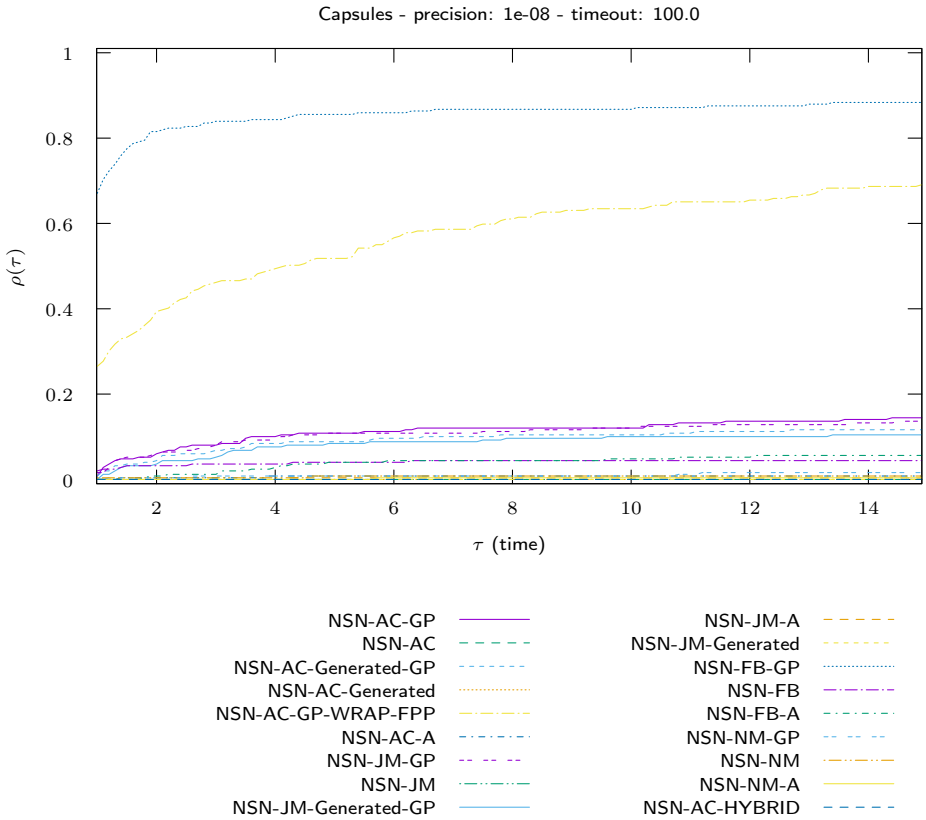


Figure 72: Capsules time NSN

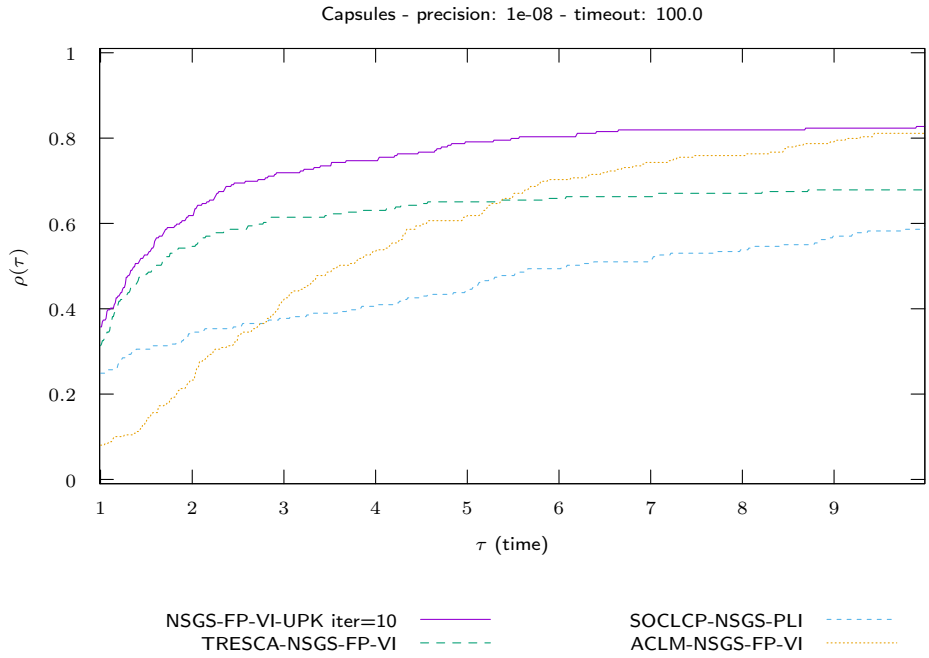


Figure 73: Capsules time OPTI

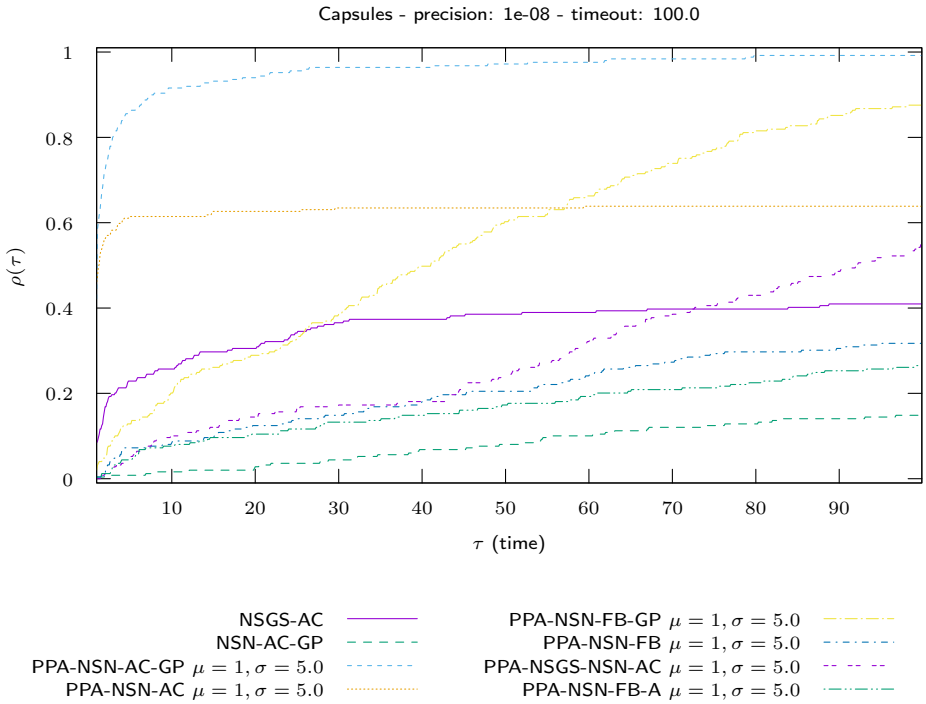
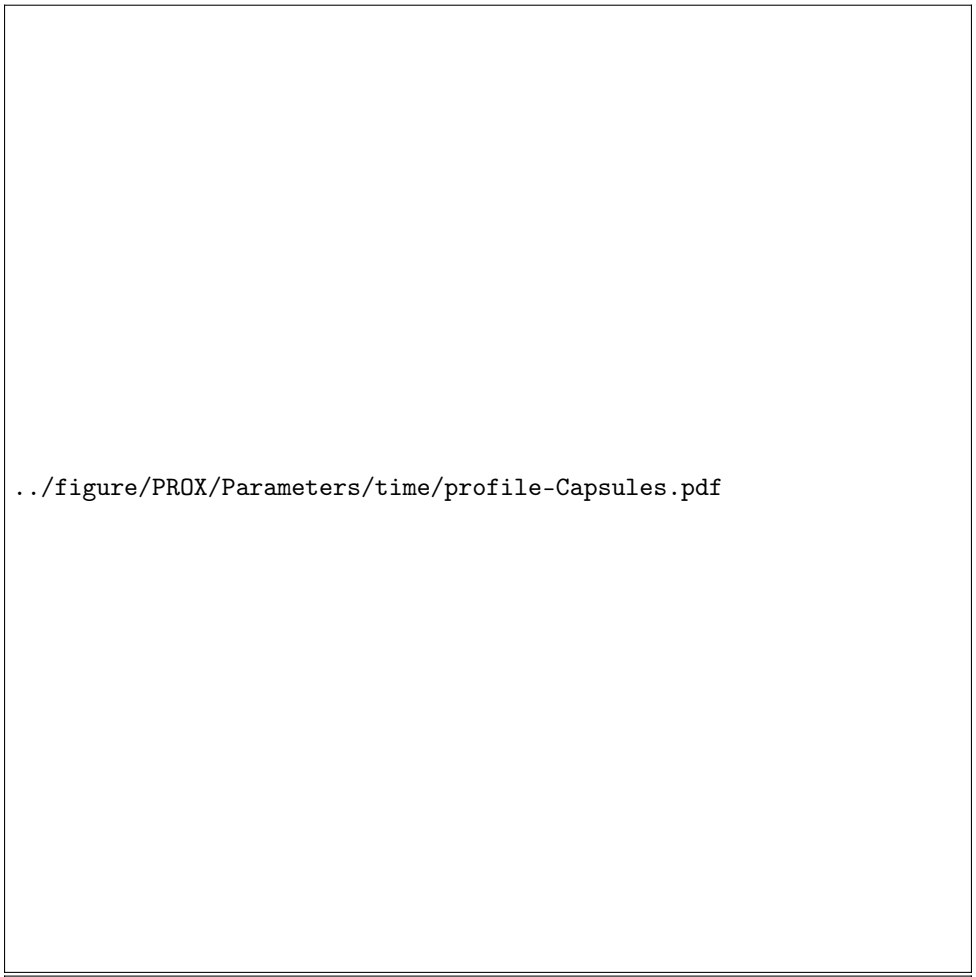


Figure 74: Capsules time PROX/InternalSolvers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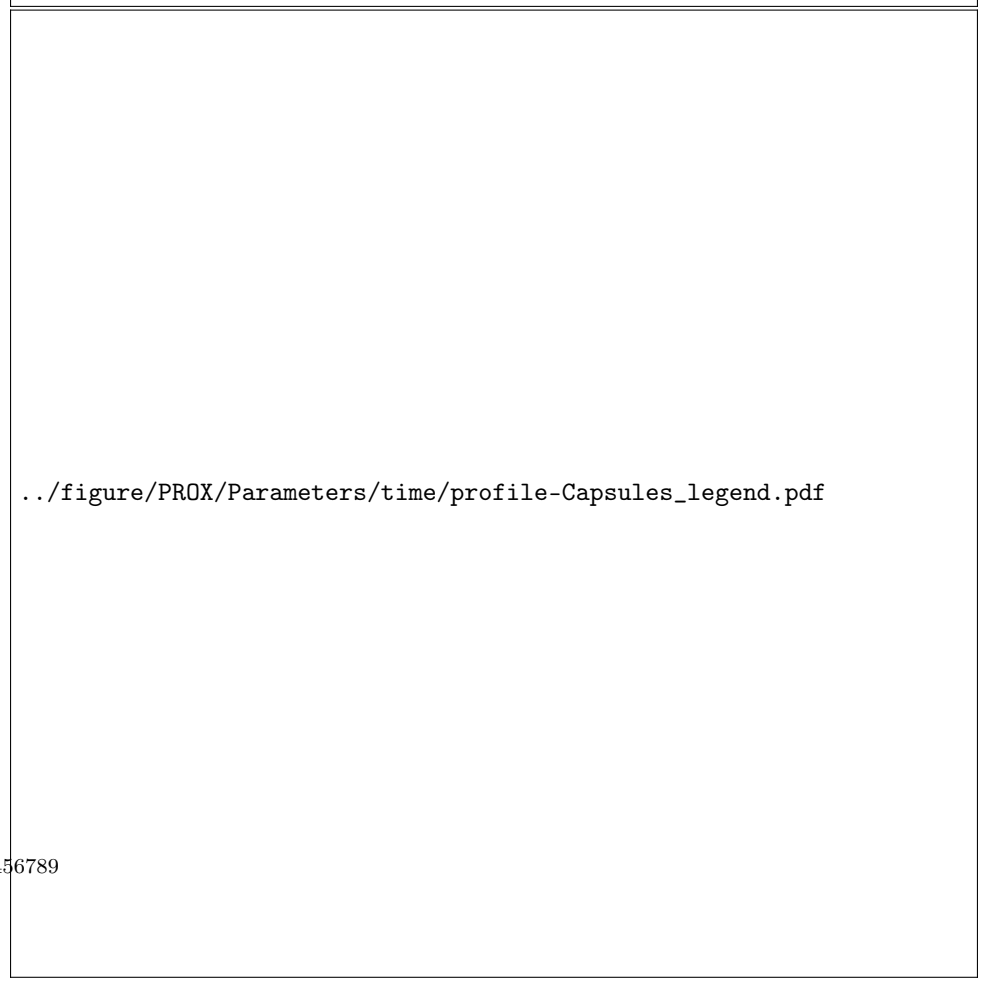
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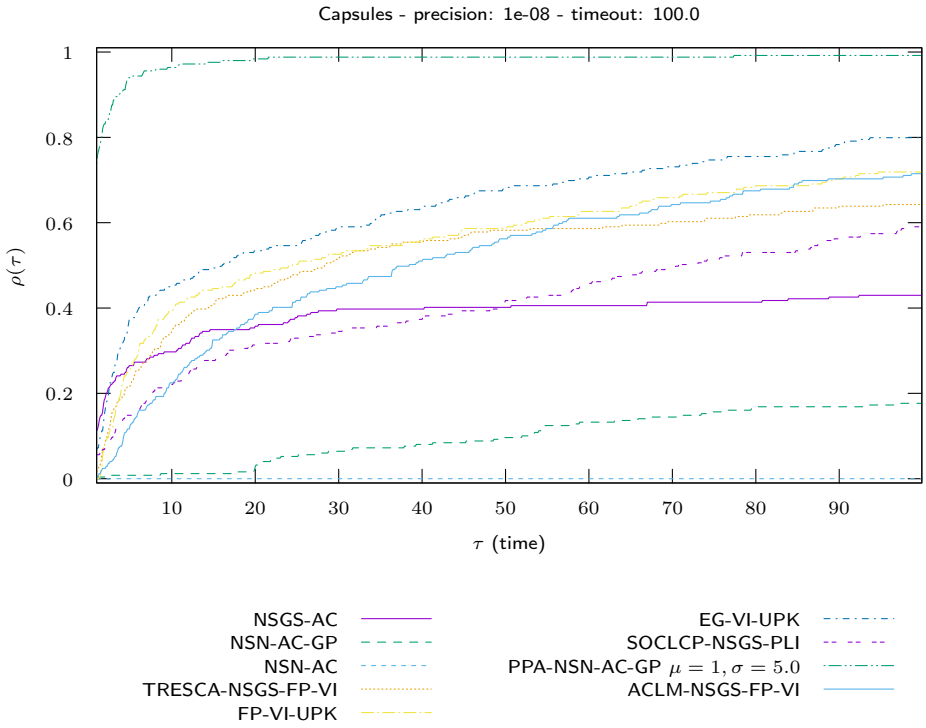


Figure 76: Capsules time COMP/large

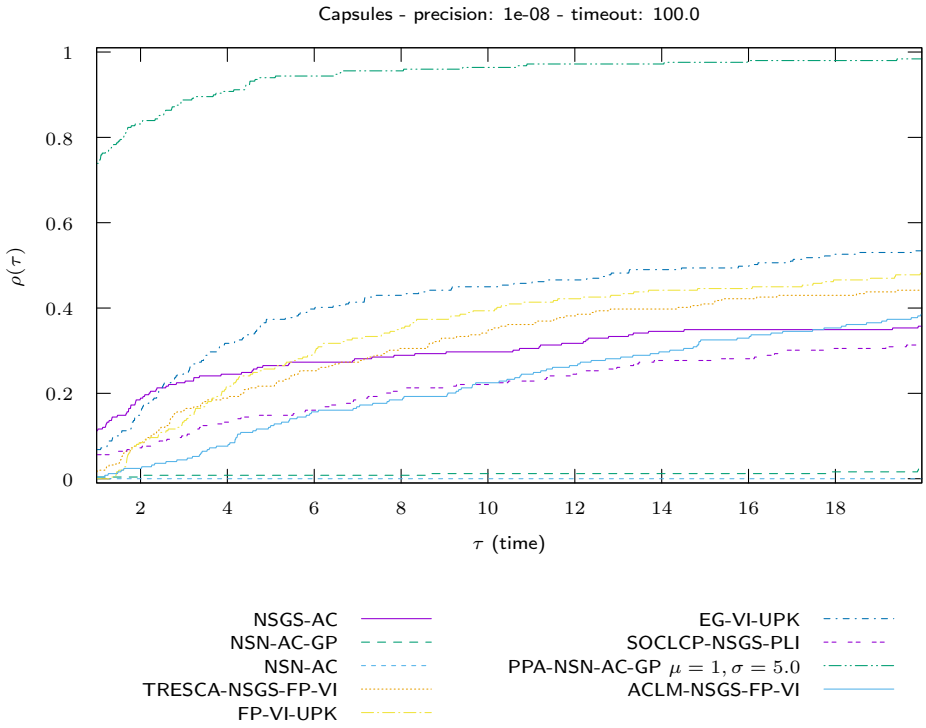


Figure 77: Capsules time COMP/large

8 Chain

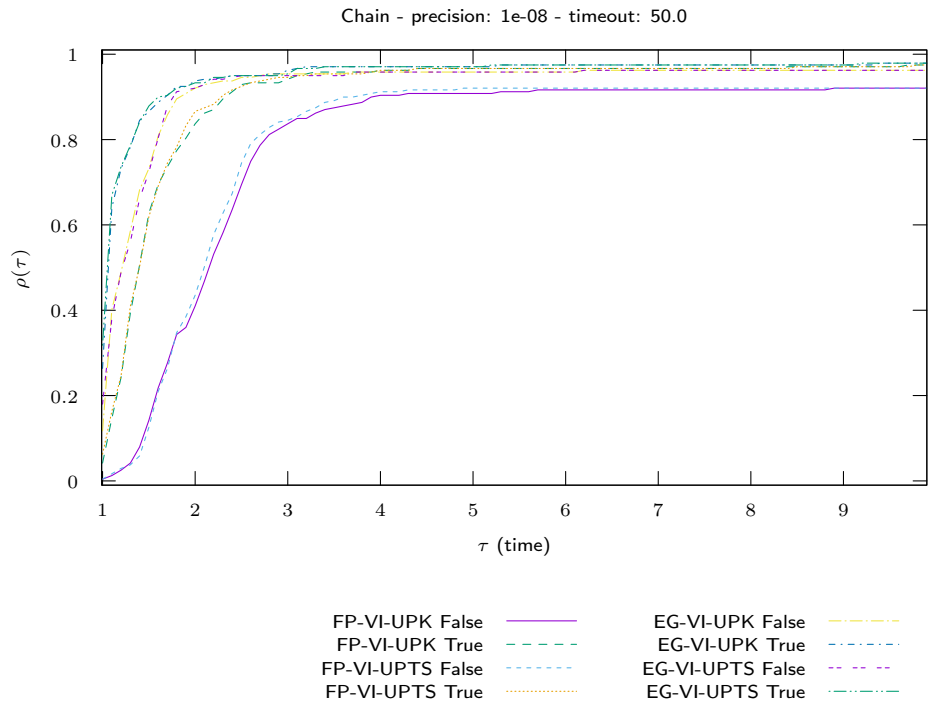


Figure 78: Chain time VI/UpdateRule

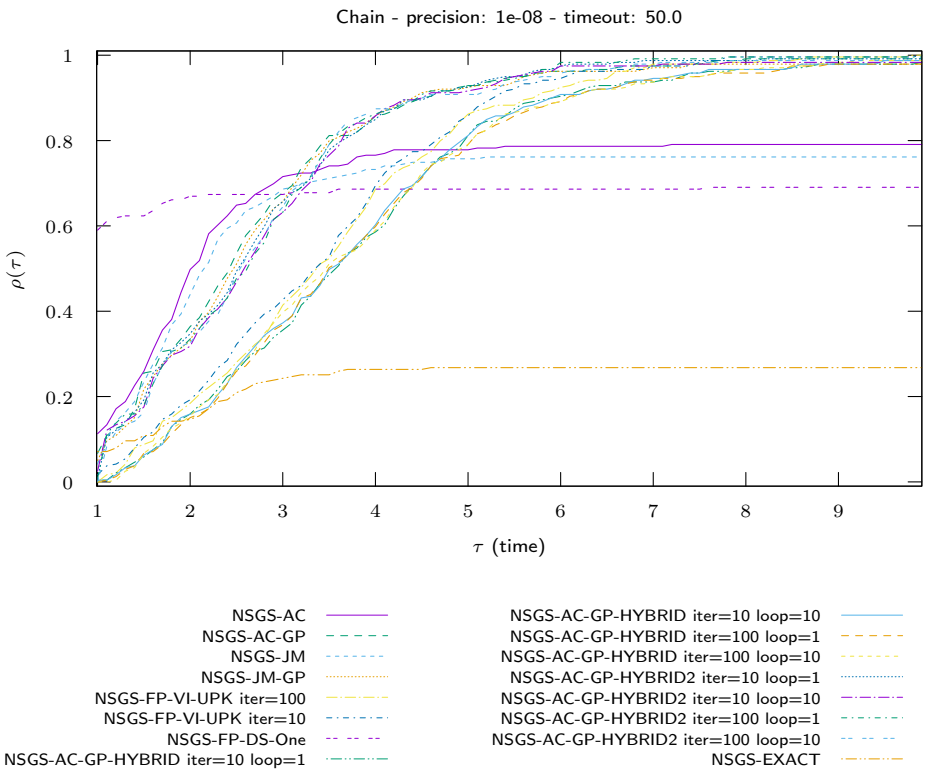


Figure 79: Chain time NSGS/LocalSolver

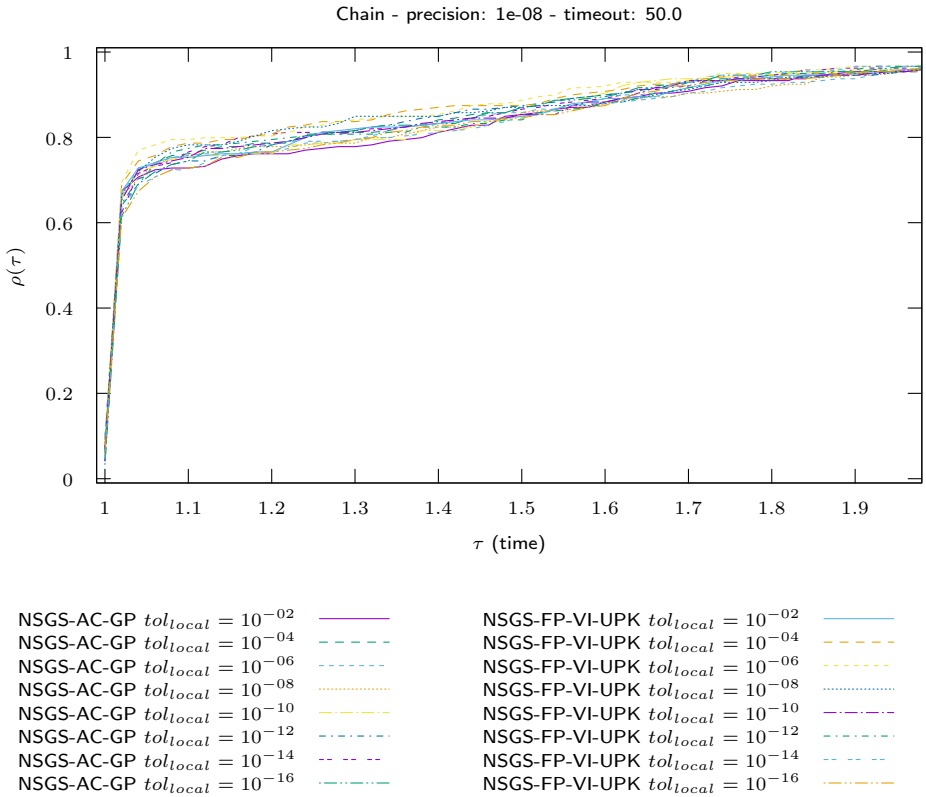


Figure 80: Chain time NSGS/LocalTol

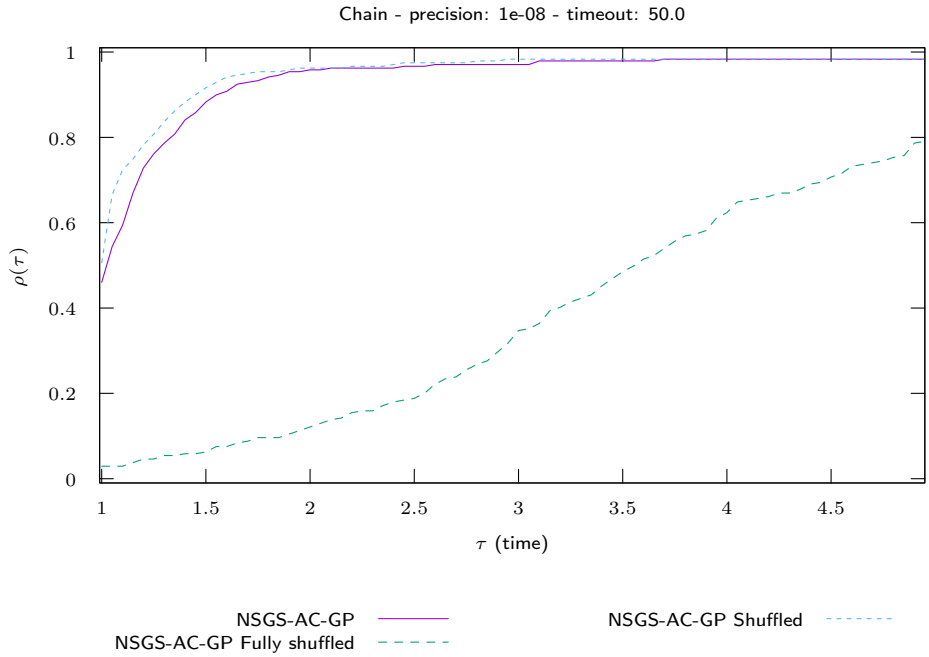


Figure 81: Chain time NSGS/Shuffled

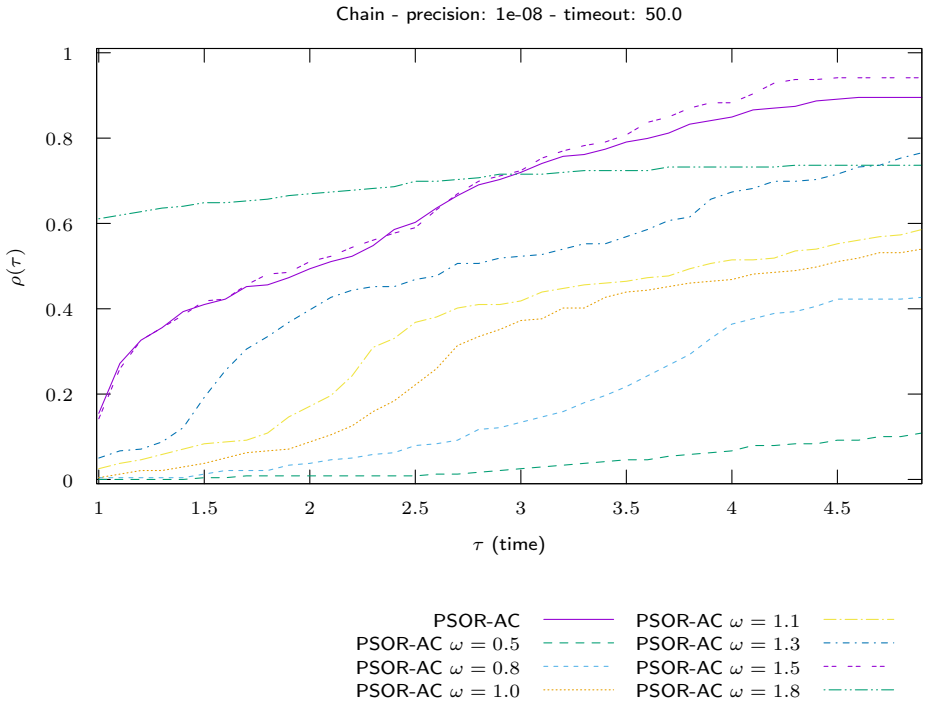


Figure 82: Chain time PSOR

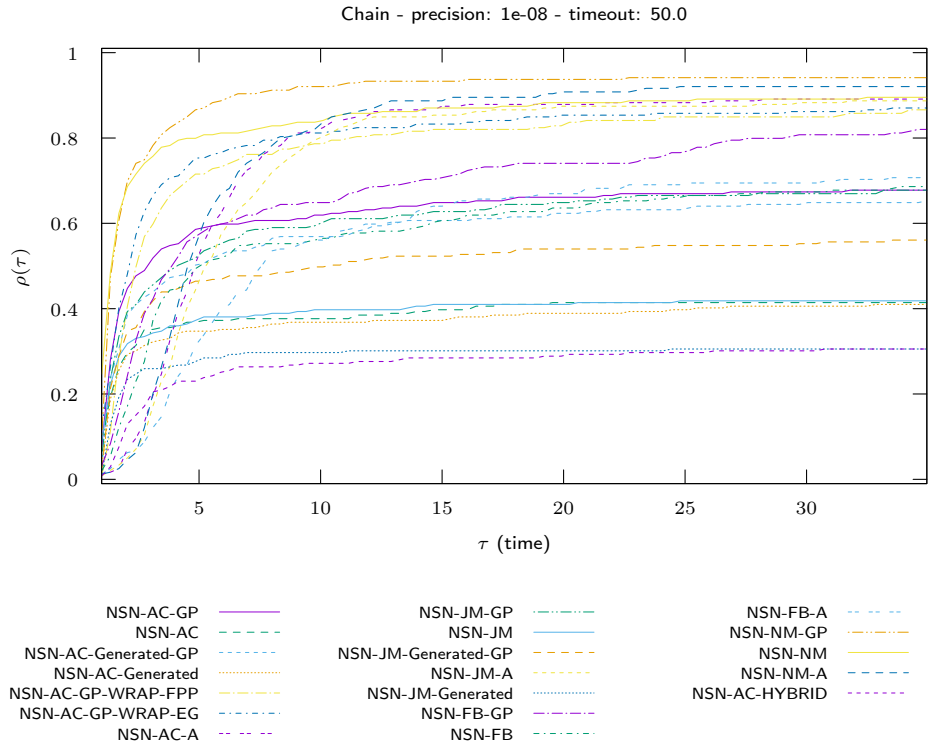


Figure 83: Chain time NSN

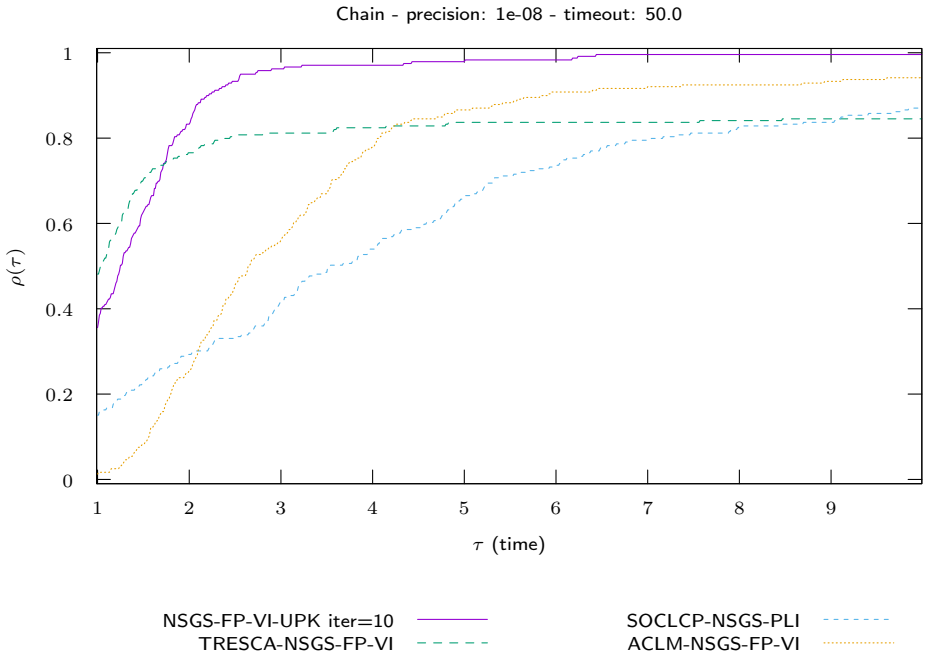


Figure 84: Chain time OPTI

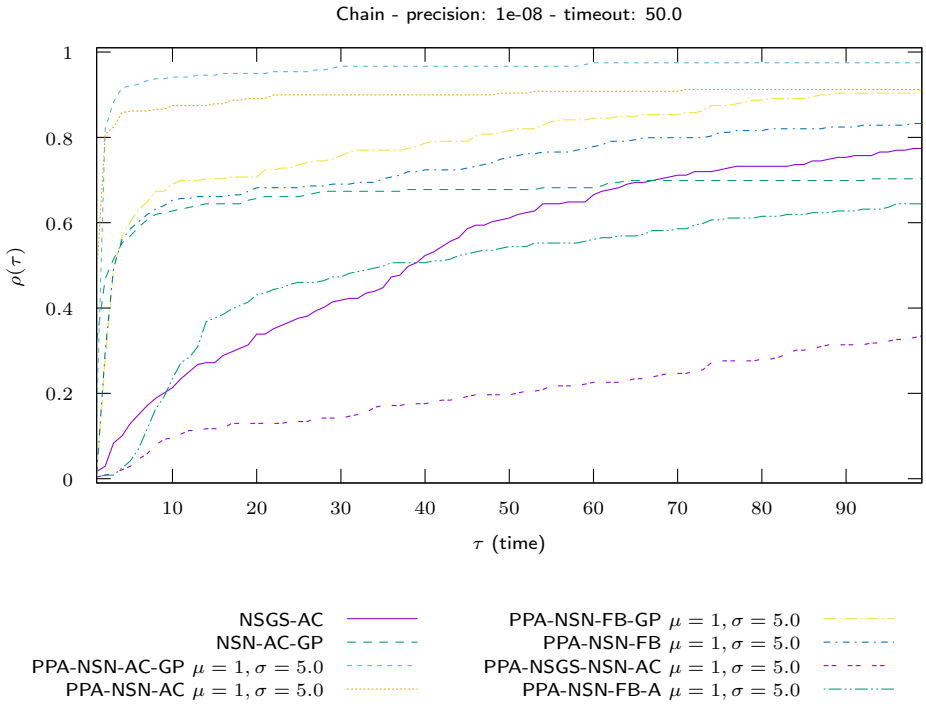
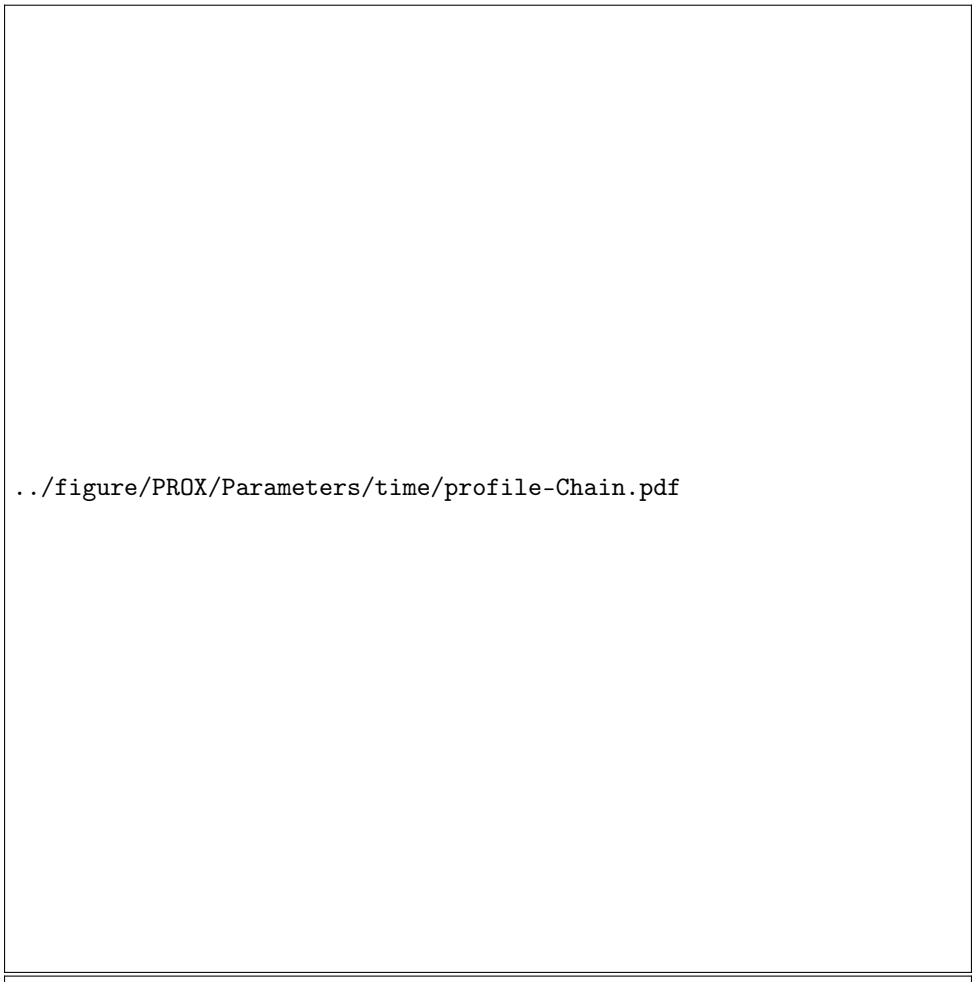


Figure 85: Chain time PROX/InternalSolvers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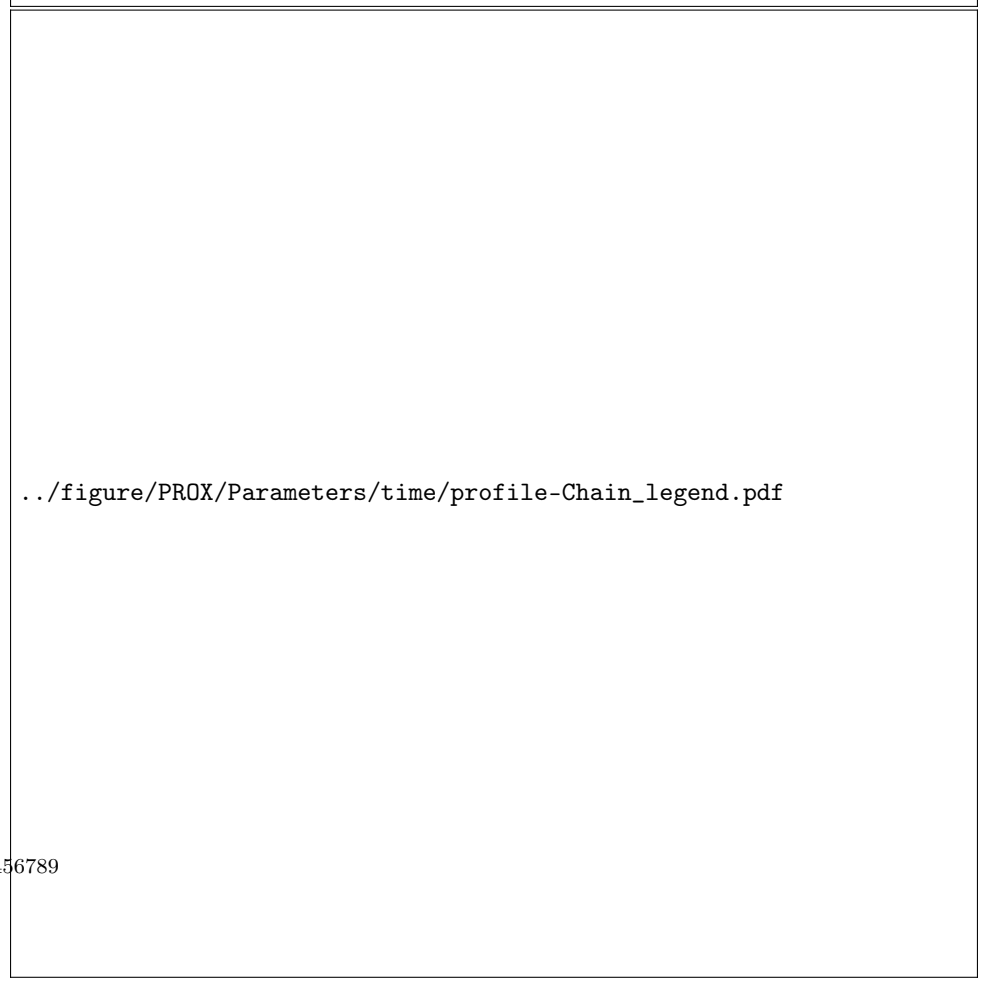

../figure/PROX/Parameters/time/profile-Chain_legend.pdf

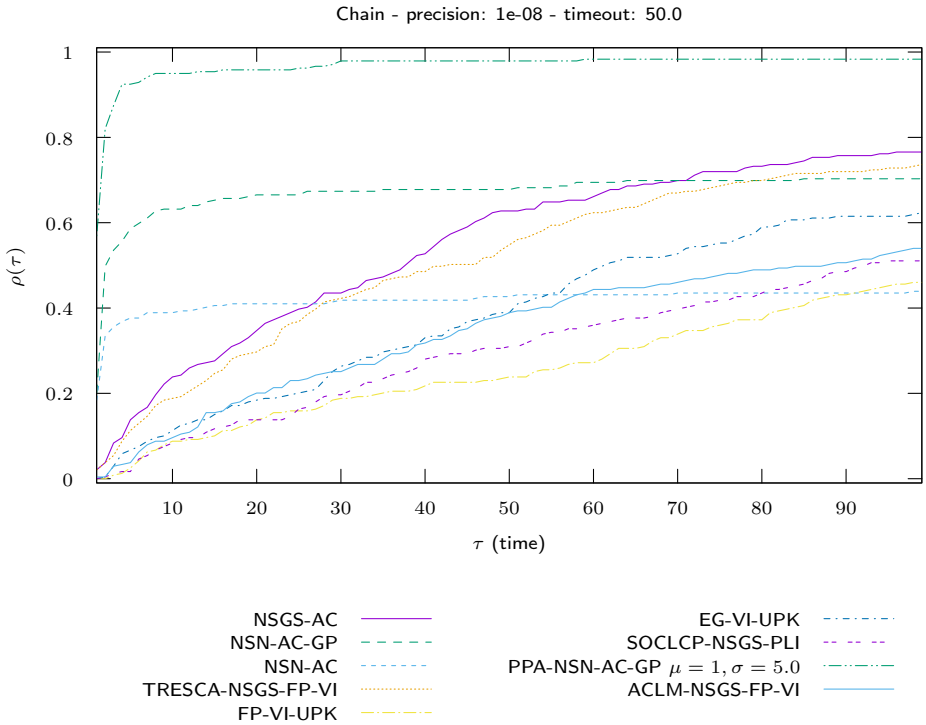


Figure 87: Chain time COMP/large

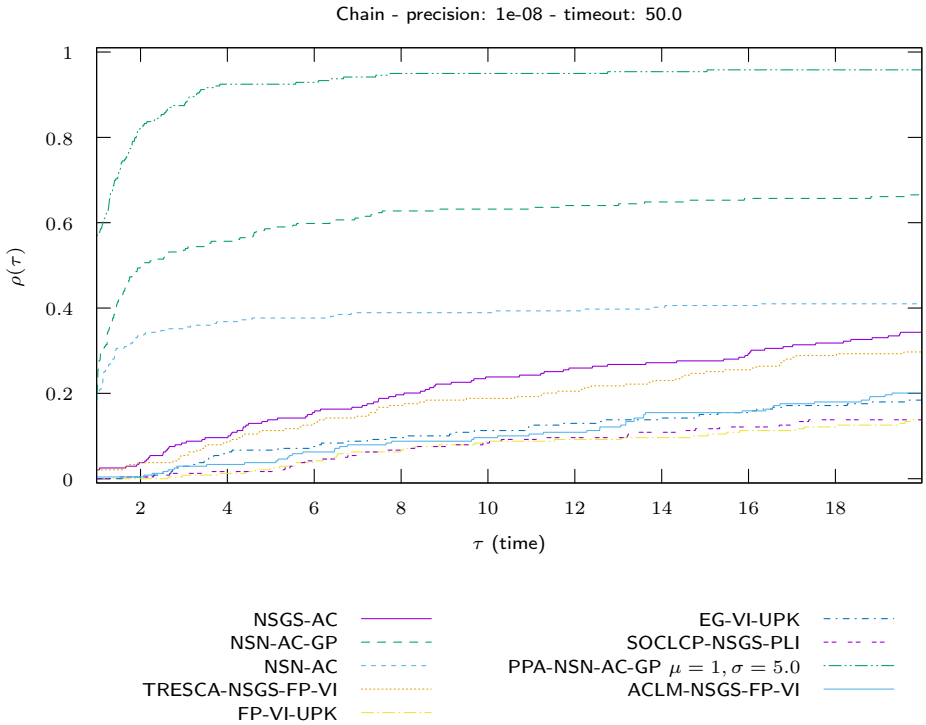


Figure 88: Chain time COMP/large

9 KaplasTower

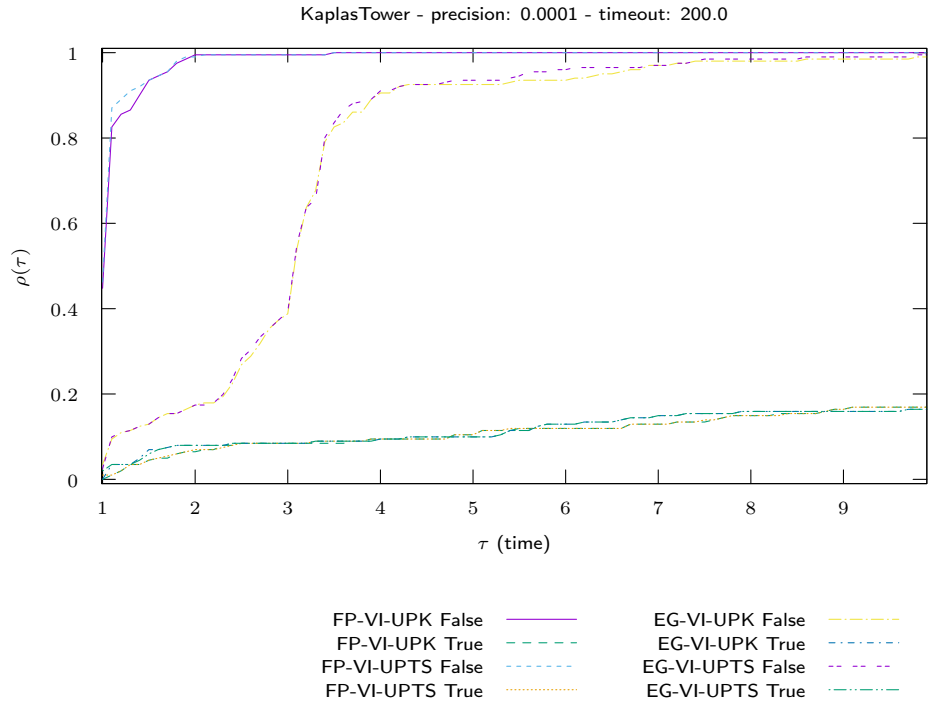


Figure 89: KaplasTower time VI/UpdateRule

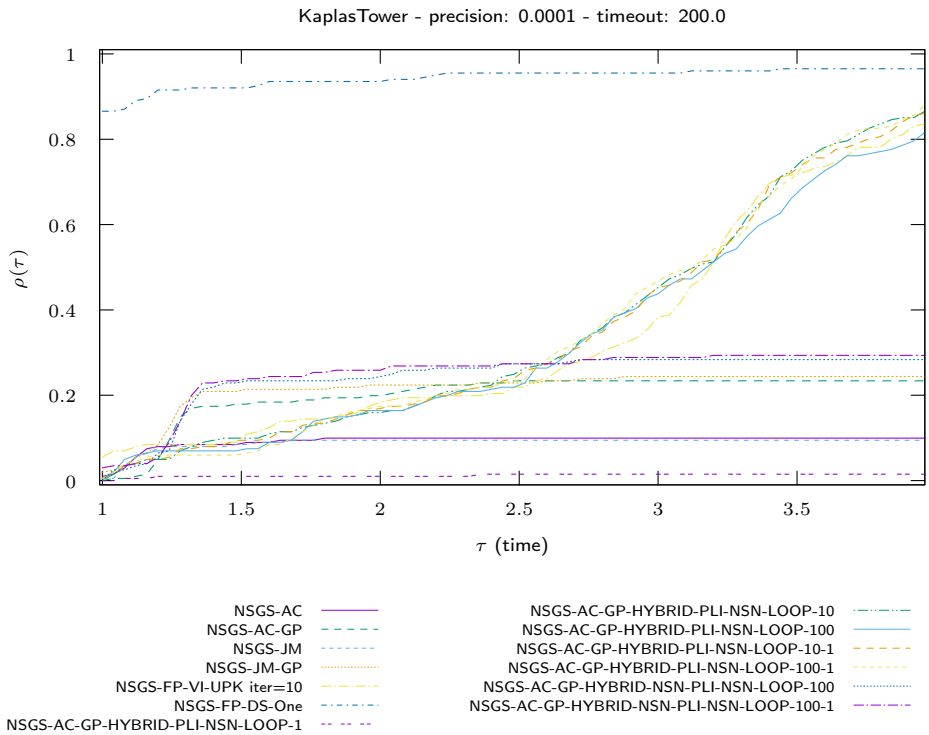


Figure 90: KaplasTower time NSGS/LocalSolver

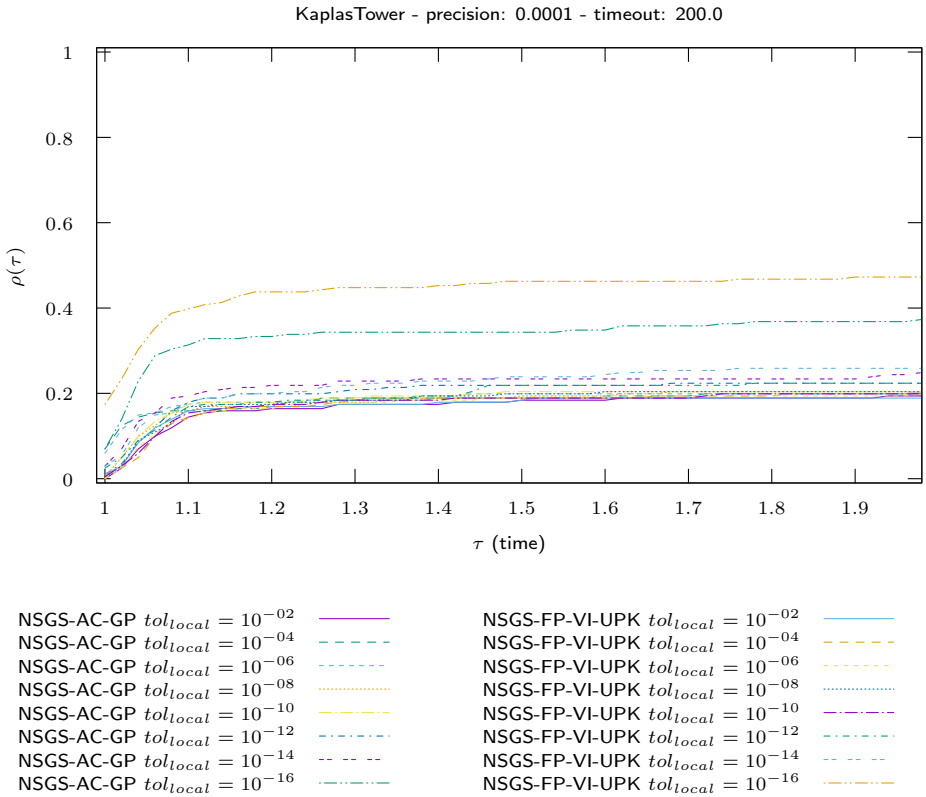


Figure 91: KaplasTower time NSGS/LocalTol

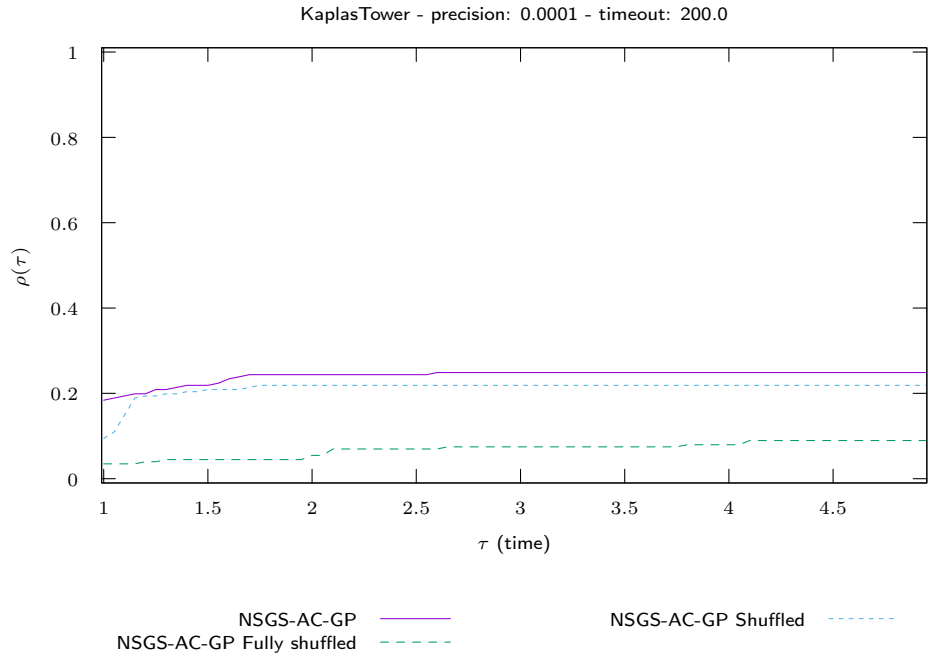


Figure 92: KaplasTower time NSGS/Shuffled

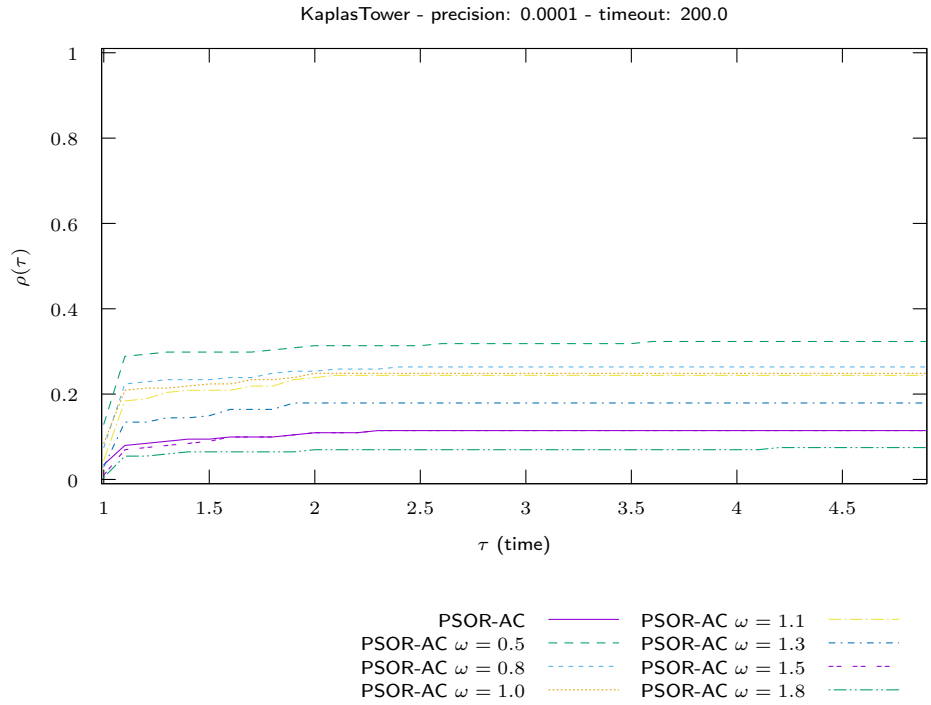


Figure 93: KaplasTower time PSOR

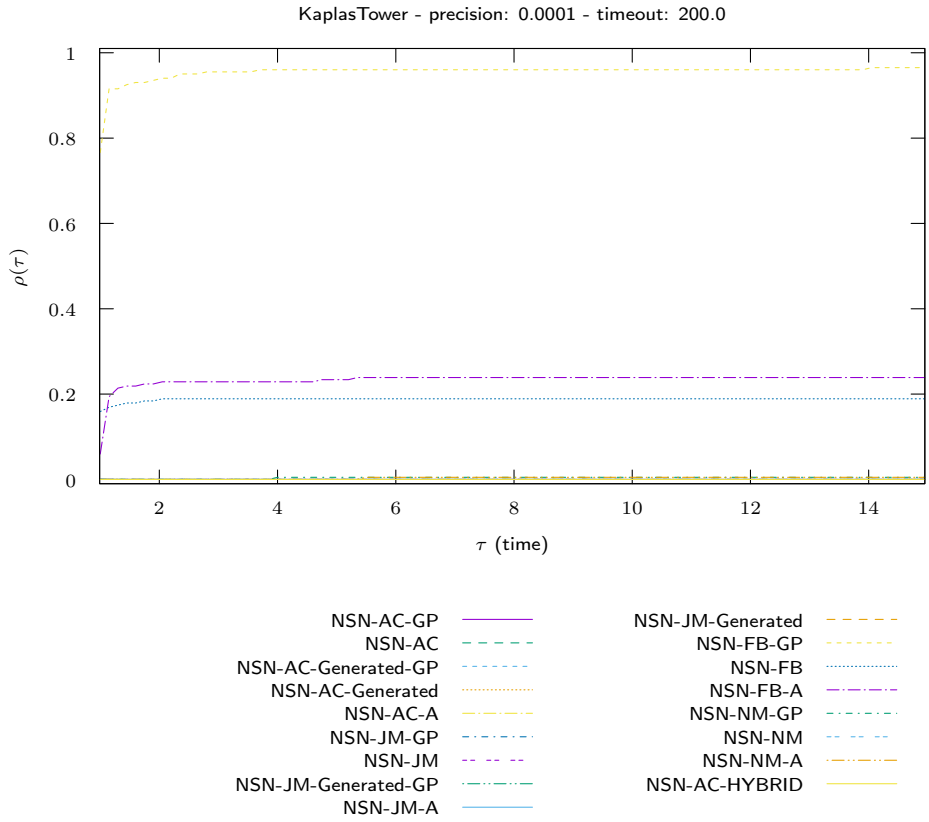


Figure 94: KaplasTower time NSN

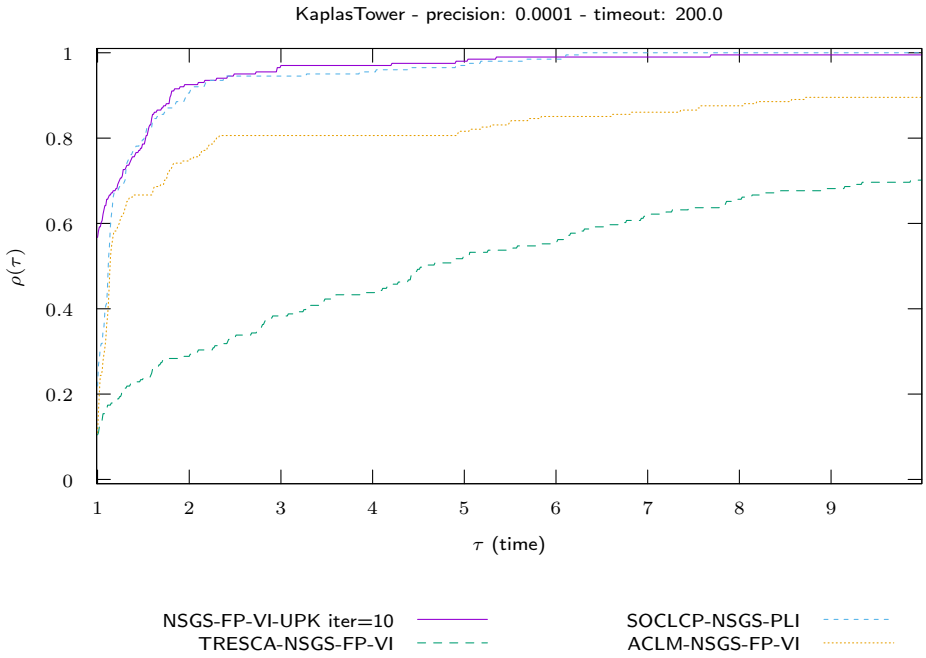


Figure 95: KaplasTower time OPTI

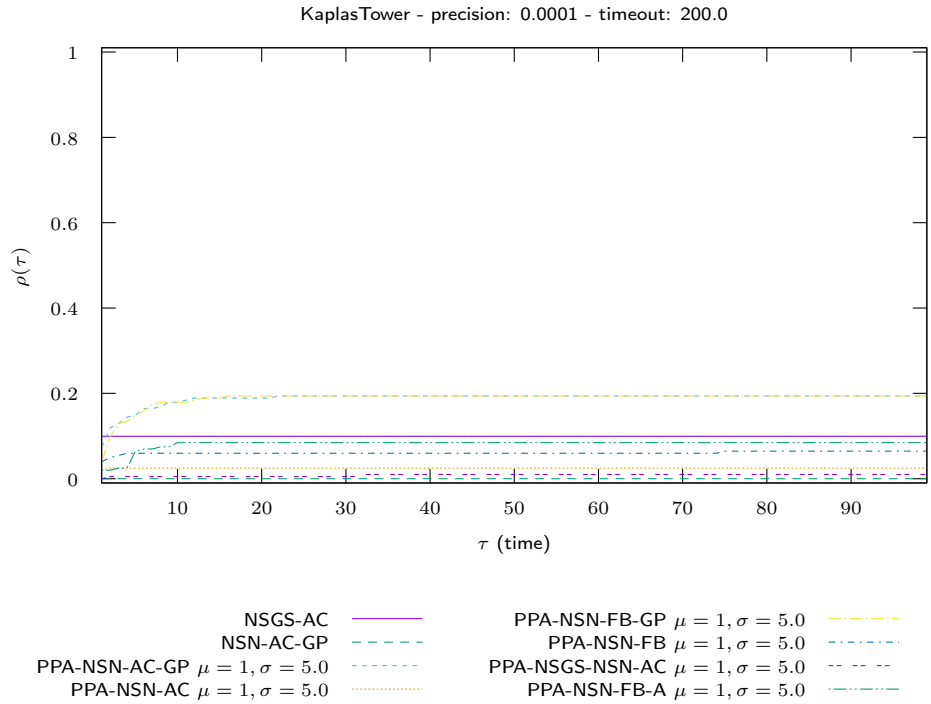
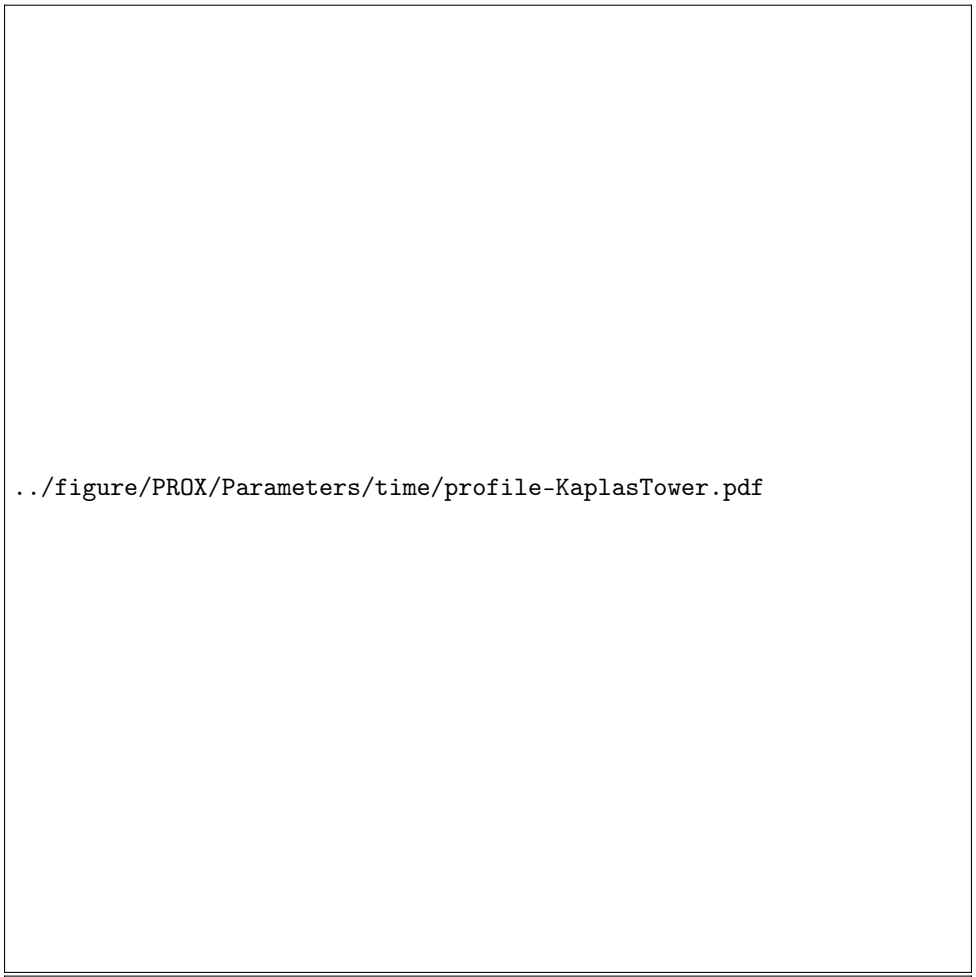
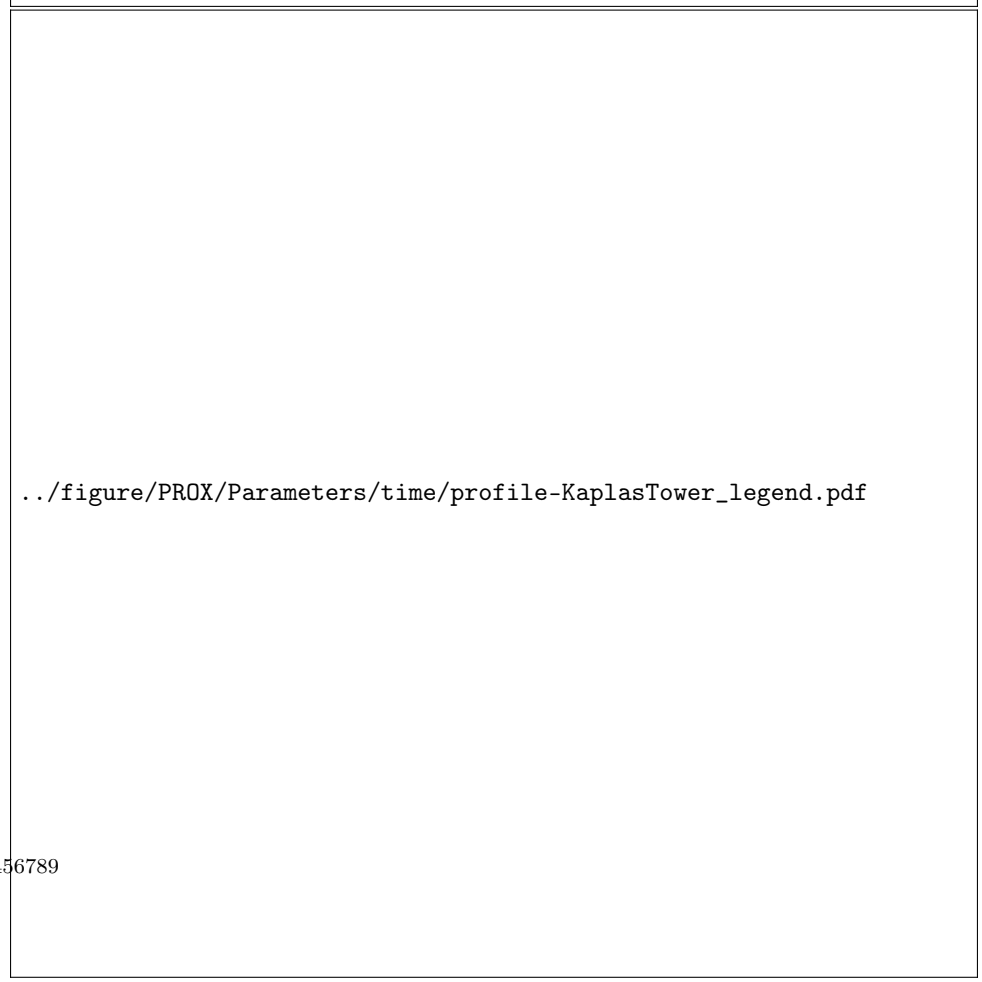


Figure 96: KaplasTower time PROX/InternalSolvers


../figure/PROX/Parameters/time/profile-KaplasTower.pdf


../figure/PROX/Parameters/time/profile-KaplasTower_legend.pdf

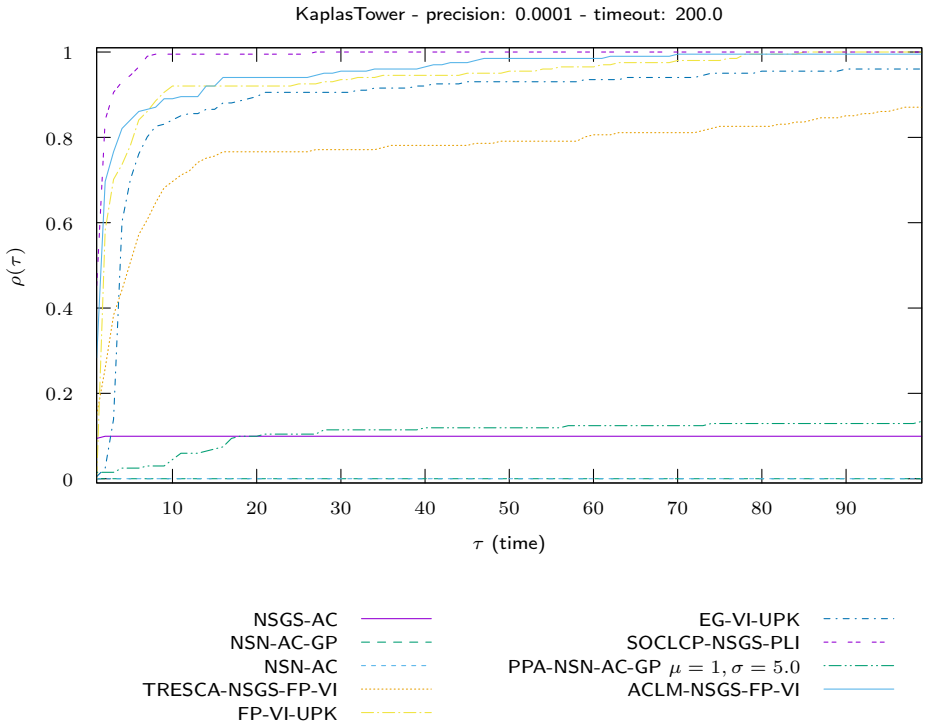


Figure 98: KaplasTower time COMP/large

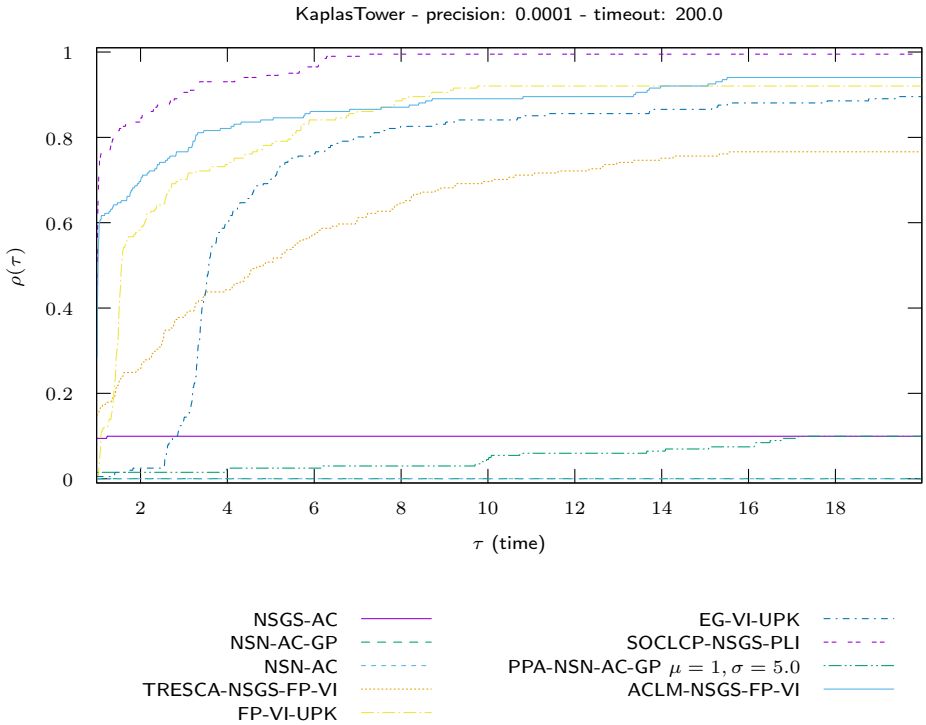
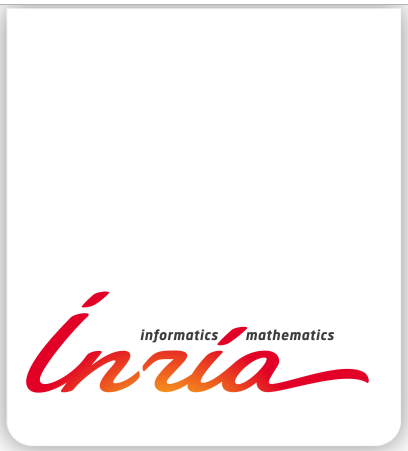


Figure 99: KaplasTower time COMP/large



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