Publication list (09-25) - Pierre Del Moral

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International journals

1. On the Mathematical foundations of Diffusion Monte Carlo. M. Caffarel, P. Del Moral, L. de Montella. Journal of Mathematical Physics, vol. 66, no. 013301 (2025). [link to article]

2. On the Particle Approximation of Lagged Feynman-Kac Formulae. E. Awadelkarim, M. Caffarel, P. Del Moral, A. Jasra. Stochastic Processes and their Applications, vol. 188, no. 104490 (2025). [link to article]

3. On Time Uniform Wong-Zakai Approximation Theorems. P. Del Moral, S. Hu, A. Jasra, H. Ruzayqat, X. Wang. Mathematics of Computation (2025). [link to article]

4. Entropic continuity bounds for conditional covariances with applications to Schrödinger and Sinkhorn bridges. P. Del Moral. Communications in Information and Systems (CIS) special issue dedicated to Prof. Thomas Kailath. 2025. [link to article]

5. Bayesian Parameter Inference for Partially Observed Diffusions using Multilevel Stochastic Runge-Kutta Methods. P. Del Moral, S. Hu, A. Jasra, H. Ruzayqat, X. Wang. International Journal for Uncertainty Quantification, vol. 15, no. 2, pp. 1-18 (2025). [link to article]

6. Self-interacting diffusions: long-time behaviour and exit-problem in the convex case. A. Aleksia, P. Del Moral, A. Kurtzmann, J. Tugaut. ESAIM: Probability & Statistics (2024). [link to article]

7. A Lyapunov approach to stability of positive semigroups: An overview with illustrations, M. Arnaudon, P. Del Moral & E.M. Ouhabaz. Stochastic Analysis and Applications (2024). [link to article]

8. Geometric Convergence and Concentration Inequalities for the Feynman–Kac Genetic Algorithm, P. Del Moral, Xinyu Wang. Frontiers of Mathematics (2024) [link to article]

9. On the Stability of Positive Semigroups. P. Del Moral, E. Horton & A. Jasra. **Annals of Applied Probability** (2023). [link to article]

10. Coupled Quantum Harmonic Oscillators and Feynman-Kac path integrals for Linear Diffusive Particles. P. Del Moral, & E. Horton. **Communications in Mathematical Physics** (2023). [link to article]

11. On the Mathematical Theory of Ensemble (Linear-Gaussian) Kalman-Bucy Filtering, A. Bishop & P. Del Moral. **Mathematics of Control, Signals and Systems** (2023). [link to article]

12. Robust Kalman and Bayesian Set-Valued Filtering and Model Validation for Linear Stochastic Systems, A. N. Bishop & P. Del Moral. SIAM/ASA Journal on Uncertainty Quantification. Vol. 11, no. 2 (2023). [link to article]

13. A theoretical analysis of one-dimensional discrete generation ensemble Kalman particle filters. P. Del Moral & E. Horton. **Annals of Applied Probability** Vol. 33, No. 2, pp. 1127-1172 (2023). [link to article]

14. Backward Itô-Ventzell and stochastic interpolation formulae. P. Del Moral & S.S. Singh. **Stochastic Processes and their Applications**, vol. 154, pp. 197–250 (2022). [link to article]

15. A note on Riccati matrix difference equations. P. Del Moral & E. Horton (2022). **SIAM Journal on Control and Optimization**, Vol. 60, no. 3 (2022). [link to article]

16. Log-Normalization Constant Estimation using the Ensemble Kalman-Bucy Filter with Application to High-Dimensional Models. D. Crisan, P. Del Moral, A. Jasra & H. Ruzayqat. **Advances in Applied Probability** (2022). [link to article]

17. Backward Nonlinear Smoothing Diffusions. B. D. O. Anderson, A. Bishop, P. Del Moral, & C. Palmier. **Theory of Probability and its Applications, TVP SIAM**, vol. 66, no.2, pp. 245-262 (2021). [link to article]

18. Stochastic Epidemic Models inference and diagnosis with Poisson Random Measure Data Augmentation. B. Nguyen-Van-Yen, P. Del Moral & B. Cazelles. **Mathematical Biosciences**, 335, 108583 (2021). [link to article]

19. A duality formula and a particle Gibbs sampler for continuous time Feynman-Kac measures on path spaces. M. Arnaudon & P. Del Moral. **Electronic Journal of Probability**, 25, pp. 1-54 (2020). [link to article]

20. A second order analysis of McKean-Vlasov semigroups. M. Arnaudon & P. Del Moral. **Annals of Applied Probability**, vol. 30, no. 6, pp. 2613-2664 (2020). [link to article]

21. A perturbation analysis of stochastic matrix Riccati diffusions. A. N. Bishop, P. Del Moral & A. Niclas. **Annales de l'Institut Henri Poincaré Probab. & Statist.**, vol. 56, no. 2, pp. 884–916 (2020). [link to article]

22. On the Stability of Matrix-Valued Riccati Diffusions. A. N. Bishop & P. Del Moral. **Electronic J. of Probability** (2019). [link to article]

23. A variational approach to nonlinear and interacting diffusions. M. Arnaudon & P. Del Moral. Stochastic Analysis and Applications, vol. 37, no.5 (2019). [link to article]

24. An explicit Floquet-type representation of Riccati aperiodic exponential semigroups. A. N. Bishop & P. Del Moral. **International Journal of Control**. (2019). [link to article]

25. Uniform propagation of chaos and creation of chaos for a class of nonlinear diffusions. P. Del Moral & J. Tugaut. Stochastic Analysis and Applications (2019). [link to article]

26. Stability Properties of Systems of Linear Stochastic Differential Equations with Random Coefficients. A.N. Bishop & P. Del Moral. **SIAM Journal on Control and Optimization**, vol. 57, no. 2 (2019). [link to article]

27. On one-dimensional Riccati diffusions. A.N. Bishop, P. Del Moral, K. Kamatani & B. Remillard. **Annals of Applied Probability**. volume 29, Number 2, pp. 1127-1187 (2019). [link to article]

28. On the Robustness of Riccati Flows to Complete Model Misspecification. A.N. Bishop & P. Del Moral. Journal of the Franklin Institute. vol. 355, no. 15, pp. 7178-7200 (2018). [link to article]

29. On the Stability and the Exponential Concentration of Extended Kalman-Bucy filters. P. Del Moral, A. Kurtzmann & J. Tugaut. **Electronic Journal of Probability**. vol. 23, paper no. 91 (2018). [link to article]

30. Perturbations and Projections of Kalman-Bucy Semigroups Motivated by Methods in Data Assimilation. A.N. Bishop, P. Del Moral & S.D. Pathiraja **Stochastic Processes and their Applications**. vol. 128, no. 9, pp. 2857-2904 (2018). [link to article]

31. On the stability and the uniform propagation of chaos properties of Ensemble Kalman-Bucy filters. P. Del Moral & J. Tugaut. **Annals of Applied Probability**. vol. 28, no. 2, pp. 790-850 (2018). [link to article]

32. A Taylor expansion of the square root matrix functional. P. Del Moral & A. Niclas. **Journal of Mathematical Analysis and Applications**. vol. 465, no. 1, pp. 259-266 (2018). [link to article]

33. Exponential mixing properties for time inhomogeneous diffusion processes with killing. P. Del Moral & D. Villemonais. **Bernoulli**. vol. 24, no. 2, pp. 1010-1032 (2018). [link to article]

34. A Note on Random Walks with Absorbing barriers and Sequential Monte Carlo Methods. P. Del Moral & A. Jasra. Stochastic Analysis and Applications vol.36, no. 3, pp. 413-442 (2018). [link to article]

35. A sharp first order analysis of Feynman-Kac particle models, Part I: Propagation of chaos. P. Del Moral & A. Jasra. **Stochastic Processes and their Applications**. vol. 128, no. 1, pp. 332-353 (2018). [link to article]

36. A sharp first order analysis of Feynman-Kac particle models, Part II: Particle Gibbs samplers. P. Del Moral & A. Jasra. **Stochastic Processes and their Applications**. vol. 128, no. 1, pp. 354-371 (2018). [link to article]

37. On the stability of Kalman-Bucy diffusion processes. A.N. Bishop & P. Del Moral. **SIAM Journal on Control and Optimization**. vol. 55, no. 6, pp. 4015-4047 (2017). [link to article]

38. Multilevel Sequential Monte Carlo samplers for normalizing constants. P. Del Moral, A. Jasra, K. Law & Y. Zhou. ACM Transactions on Modeling and Computer Simulation. vol. 27, no. 3 (2017). [link to article]

39. Unbiased multi-index Monte Carlo. D. Crisan, P. Del Moral, J. Houssineau & A. Jasra,. Stochastic Analysis and Applications. vol. 36, pp. 257-273 (2017). [link to article]

40. On the stability and the uniform propagation of chaos of a Class of Extended Ensemble Kalman-Bucy filters. P. Del Moral, A. Kurtzmann & J. Tugaut. **SIAM Journal Control & Optimization**. vol. 55, no. 1, pp. 119–155 (2017). [link to article]

41. Multilevel Sequential Monte Carlo: Mean Square Error Bounds under Verifiable Conditions. P. Del Moral, A. Jasra & K. Law. Stochastic Analysis and Applications. vol. 35, pp. 478-498 (2017). [link to article]

42. Non-Asymptotic Analysis of Adaptive and Annealed Feynman-Kac Particle Models. P. Del Moral & F Giraud. **Bernoulli**. vol. 23, no. 1, pp. 670-709 (2017). [link to article]

43. Convergence Properties of Weighted Particle Islands with Application to the Double Bootstrap Algorithm. P. Del Moral E. Moulines, J. Olsson & C. Vergé. Stochastic Systems. vol. 6, no. 2 pp. 367-419 (2017). [link to article]

44. Biased Bayesian online parameter estimation. P. Del Moral, A. Jasra & Y. Zhou. Methodology and Computing in Applied Probability. vol. 19, no. 3, pp 727-749 (2016). [link to article]

45. On particle Gibbs samplers. P. Del Moral, R. Kohn & F. Patras. **Annales de l'Institut Henri Poincaré Probab. & Statist.** vol 52, no. 4, pp. 1687-1733 (2016). [link to article]

46. An island particle Markov chain Monte Carlo algorithm for safety analysis. C. Vergé, J. Morio & P Del Moral. Reliability Engineering & System Safety. vol. 149, pp. 63-75 (2016). [link to article]

47. Valuation of Barrier Options using Sequential Monte Carlo. P. Shevchenko & P. Del Moral. Journal of Computational Finance. vol. 20, no. 4, pp. 107-135 (2016). [link to article]

48. Sequential Monte Carlo with Highly Informative Observations. P. Del Moral & L. Murray. SIAM/ASA Journal on Uncertainty Quantification. vol. 3, no. 1, pp. 969–997 (2015). [link to article]

49. The Alive Particle Filter and its use in particle Markov Chain Monte Carlo. P. Del Moral, A. Jasra, A. Lee, C. Yau, & X. Zhang. Stochastic Analysis and Applications. vol. 33, no. 6, pp. 943-974 (2015). [link to article]

50. On parallel implementation of Sequential Monte Carlo methods: the island particle model. C. Vergé, C. Dubarry, P. Del Moral & E. Moulines. **Statistics and Computing**. vol. 25, no. 2, pp 243-260 (2015). [link to article]

51. Uniform stability of a particle approximation of the optimal filter derivative. P. Del Moral, A. Doucet & S.S. Singh. **SIAM Journal on Control and Optimization**. vol.53, no. 3, pp. 1278-1304 (2015). [link to article]

52. Moderate Deviations for Interacting Processes. P. Del Moral, S. Hu & L. Wu. **Statistica Sinica**. vol. 25, no. 3, pp. 921-951 (2015). [link to article]

53. A Lognormal Central Limit Theorem for Particle Approximations of Normalizing Constants. J. Bérard, P Del Moral & A. Doucet. **Electronic Journal of Probability**. vol.19, article no. 94, pp. 1-28 (2014). [link to article]

54. Approximate Bayesian Computation for Smoothing. J. S. Martina, A. Jasra, S. S. Singh, N. Whiteley, P. Del Moral & E. McCoy. Stochastic Analysis and Applications. vol.32, Issue 3, pp. 397-422 (2014). [link to article]

55. Feynman-Kac particle integration with geometric interacting jumps. P Del Moral, P. Jacob, A. Lee, L. Murray & G.W. Peters. Stochastic Analysis and Applications. vol. 31, no. 5, pp. 830-871 (2013). [link to article]

56. Advanced Interacting Sequential Monte Carlo Sampling for Inverse Scattering. F. Giraud, P. Minvielle & P. Del Moral. **IOP Inverse Problems**. vol. 29, no. 9 (2013). [link to article]

57. Mean-field PHD filters based on generalized Feynman-Kac flow. M. Pace & P. Del Moral. IEEE Journal of Selected Topics in Signal Processing. vol. 7, no. 3, pp. 484-495 (2013). [link to article]

58. An Adaptive Interacting Wang-Landau Algorithm for Automatic Density Exploration. L. Bornn, P. Jacob, P. Del Moral, & A. Doucet. **Journal of Computational and Graphical Statistics.** vol. 22, no. 3, pp. 749-773 (2013). [link to article]

59. Discrete Time Markovian Agents Interacting Through a Potential. A. Budhiraja, P. Del Moral & S. Rubenthaler. ESAIM Probability & Statistics. vol. 17, pp. 614-634 (2013). [link to article]

60. Snell envelope with small probability criteria. P. Del Moral, P. Hu & N. Oudjane. Applied Mathematics and Optimization. vol. 66, no. 3, pp. 309-330 (2012). [link to article]

61. Modal parameter estimation using interacting Kalman filters. M. Zghal, L. Mevel & P. Del Moral. **Journal of Mechanical Systems and Signal Processing**. vol. 47, no. 1-2-3, pp. 139-150 (2012). [link to article]

62. Fluctuations of Interacting Markov Chain Monte Carlo Models. B. Bercu, P. Del Moral & A. Doucet. **Stochastic Processes and their Applications**. vol. 122, no. 4, pp. 1304-1331 (2012). [link to article]

63. On Adaptive Resampling Procedures for Sequential Monte Carlo Methods. P. Del Moral, A. Doucet & A. Jasra. **Bernoulli**. vol. 18, no. 1, pp. 252-278 (2012). [link to article]

64. An Adaptive Sequential Monte Carlo Method for Approximate Bayesian Computation. P. Del Moral, A. Doucet & A. Jasra. **Statistics and Computing**. vol 22, no. 5, pp 1009-1020 (2012). [link to article]

65. On the Stability and the Approximation of Branching Distribution Flows, with Applications to Nonlinear Multiple Target Filtering. F. Caron, P. Del Moral, M. Pace & B.N. Vo. Stochastic Analysis and Applications. vol. 29, no. 6, pp. 951-997 (2011). [link to article]

66. On the Robustness of the Snell envelope. P. Del Moral, P. Hu, N. Oudjane & B. Remillard. SIAM Journal on Financial Mathematics. vol. 2, no. 1, pp. 587-626 (2011). [link to article]

67. On nonlinear Markov chain Monte Carlo via Self-interacting approximations. C. Andrieu, A. Jasra, A. Doucet & P. Del Moral. **Bernoulli**. vol. 17, no. 3, pp. 987-1014 (2011). [link to article]

68. Particle approximations of a class of branching distribution flows arising in multi-target tracking. F. Caron, P. Del Moral, A. Doucet & M. Pace. **SIAM Journal on Control and Optimization.** vol. 49, no 4, pp. 1766-1792 (2011). [link to article]

69. The Reality of Neandertal Symbolic Behavior at the Grotte du Renne, Arcy-sur-Cure, France. F. Caron, F. d'Errico, P. Del Moral, F. Santos & J. Zilhao. **PLoS ONE**, vol. 6, no. 6 (2011). [link to article]

70. Convergence of U-statistics for interacting particle systems. P. Del Moral, F. Patras & S. Rubenthaler. **Journal of Theoretical Probability**. 24:1002 (2011). [link to article]

71. On the Conditional Distributions of Spatial Point Processes. F. Caron, P. Del Moral, A. Doucet & M. Pace. **Advances in Applied Probability.** vol. 43, no. 2, pp. 301-307 (2011). [link to article]

72. Sequential Monte Carlo for Rare event estimation. F. Cerou, P. Del Moral, T. Furon & A. Guyader. **Statistics and Computing**. vol. 22, no. 3, pp 795-808 (2011). [link to article]

73. Concentration Inequalities for Mean Field Particle Models. P. Del Moral & E. Rio. **Annals of Applied Probability**. vol. 21, no. 3, pp. 1017-1052 (2011). [link to article]

74. Stability of Feynman-Kac formulae with path-dependent potentials. P. Del Moral, N. Chopin & S. Rubenthaler. **Stochastic Processes and their Applications**. vol. 121, no. 1, pp. 38-60 (2011). [link to article]

75. A non asymptotic variance theorem for unnormalized Feynman-Kac particle models. F. Cérou, P. Del Moral & A. Guyader. **Annales de l'Institut Henri Poincaré Probab. & Statist.**, vol. 47, no. 3, pp. 629-649 (2011). [link to article]

76. Sequential Monte Carlo Methods for Option Pricing. P. Del Moral & A. Jasra. Stochastic Analysis and Applications. vol. 29, no. 2, pp. 292-316 (2011). [link to article]

77. Sequentially Interacting Markov chain Monte Carlo. A. Brockwell, P. Del Moral & A. Doucet. **Annals of Statistics**, vol. 38, no. 6, pp. 3387-3411 (2010). [link to article]

78. An Introduction to probabilistic methods, with applications. P. Del Moral & N. Hadjiconstantinou. M2AN. vol 44, no. 5, pp. 805-830 (2010). [link to article]

79. A Backward Particle Interpretation of Feynman-Kac Formulae. P. Del Moral, A. Doucet & S.S. Singh. M2AN. vol 44, no. 5, pp. 947-976 (2010). [link to article]

80. Fundamentals of stochastic filtering by Alan Bain and Dan Crisan. P. Del Moral. **Bulletin of the American Mathematical Society** (2010). [link to book review]

81. Interacting Markov Chain Monte Carlo Methods For Solving Nonlinear Measure-Valued Equations. P. Del Moral & A. Doucet. **Annals of Applied Probability**, vol. 20, no. 2, pp. 593-639 (2010). [link to article]

82. A Functional Central Limit Theorem for a Class of Interacting Markov Chain Monte Carlo Models. B. Bercu, P. Del Moral & A. Doucet. **Electronic Journal of Probability**, vol. 14, no. 73, pp. 2130-2155 (2009). [link to article]

83. Tree based functional expansions for Feynman-Kac particle models. P. Del Moral, F. Patras & S. Rubenthaler. **Annals of Applied Probability**, vol. 19, no. 2, pp. 778-825. (2009). [link to article]

84. The convergence to equilibrium of neutral genetic models. P. Del Moral, L. Miclo, F. Patras & S. Rubenthaler. Stochastic Analysis and Applications. vol. 28, no. 1, pp. 123-143 (2009). [link to article]

85. A note on convergence of the equi-energy sampler. C. Andrieu, A. Jasra, A. Doucet & P. Del Moral. Stochastic Analysis and Applications. vol. 26, no. 2, 298-312 (2008). [link to article]

86. Strong propagations of chaos in Moran's type particle interpretations of Feynman-Kac measures. P. Del Moral & L. Miclo. Stochastic Analysis and Applications. vol. 25, no. 3, 519-575 (2007). [link to article]

87. Sharp Propagations of Chaos Estimates for Feynman-Kac particle Models. P. Del Moral, A. Doucet & G.W. Peters. **Probability Theory and its Applications. SIAM**, vol. 51, no. 3, pp. 459-485 (2007). [link to article]

88. Simulations of rare events in fiber optics by interacting particle systems. P. Del Moral, & J. Garnier. Optics Communications. vol. 267, no. 1, pp. 205-214 (2006). [link to article]

89. Sequential Monte Carlo Samplers. P. Del Moral, A. Doucet & A. Jasra. **Journal of the Royal Statistical Society, Series B.**, vol. 68, no. 3, pp. 411-436 (2006). [link to article]

90. Open-loop regulation and tracking control based on a genealogical decision tree. K. Najim, E. Ikonen & P. Del Moral. Neural Computing and Applications. vol. 15, no. 3/4, pp. 339-349 (2006). [link to article]

91. Self Interacting Markov chains. P. Del Moral & L. Miclo. Stochastic Analysis and Applications. vol. 24, no. 3, pp. 615-660 (2006). [link to article]

92. Genetic Genealogical models in rare event analysis. F. Cerou, P. Del Moral, F. Le Gland & P. Lezaud. Alea, Latin American Journal of Probability And Mathematical Statistics. Alea 1, pp. 181-203 (2006). [link to article]

93. Dynamiques de Feynman-Kac recuites. P. Del Moral & L. Miclo. ESAIM Prob. and Stats. vol. 10, pp. 76-140 (2006). [link to article]

94. Genealogical Particle Analysis of Rare events. P. Del Moral & J. Garnier. **Annals of Applied Probability**, vol. 15, no. 4, 2496–2534 (2005). [link to article]

95. A Berry-Esseen theorem for Feynman-Kac and interacting particle models. P. Del Moral & S. Tindel. **Annals of Applied Probability**, vol. 15, no. 1B, pp. 941-962 (2005). [link to article]

96. Particle Motions in Absorbing Medium with Hard and Soft Obstacles. P. Del Moral & A. Doucet. Stochastic Analysis and Applications. vol. 22, no. 5, pp. 1175-1207 (2004). [link to article]

97. Particle approximations of Lyapunov exponents connected to Schrödinger operators and Feynman-Kac semigroups. P. Del Moral & L. Miclo. ESAIM: Probabilités et Statistiques. t. 7, pp. 171-208 (2003). [link to article]

98. On contraction properties of Markov kernels. P. Del Moral, M. Ledoux & L. Miclo. **Probability Theory and Related Fields**. vol. 126, no.3, pp. 395-420 (2003). [link to article]

99. Annealed Feynman-Kac Models. P. Del Moral & L. Miclo. **Communications in Mathematical Physics**. vol. 235, no. 2, pp.191–214 (2003). [link to article]

100. On a class of genealogical and interacting Metropolis Models. P. Del Moral & A. Doucet. Séminaire de Probabilités. Lecture Notes in Mathematics. no. XXXVII, 1832, Springer-Verlag Berlin, pp. 415–446 (2003). [link to article]

101. A note on Laplace-Varadhan's integral lemma. P. Del Moral & T. Zajic. **Bernoulli**. vol. 9, no. 1, pp. 49-65 (2003). [link to article]

102. On convergence of chains with time empirical self-interactions. P. Del Moral & L. Miclo. **Proc. Royal Soc. Lond. A.** vol. 460, pp. 325–346 (2004). [link to article]

103. An improved version of the McMurtry-Fu Reinforcement Learning Scheme. N. Kaddour, P. Del Moral & E. Ikonen. International Journal of Systems Science. vol. 34, no.1, pp. 37-47 (2003). [link to article]

104. On the Stability of Non Linear Semigroup of Feynman-Kac Type. P. Del Moral & L. Miclo. Annales de la Faculté des Sciences de Toulouse. serie 6, t. 11, no.2, pp. 135-175 (2002). [link to article]

105. Genealogies and Increasing Propagations of Chaos for Feynman-Kac and Genetic Models. P. Del Moral & L. Miclo. **Annals of Applied Probability**, vol. 11, No. 4, pp. 1166-1198 (2001). [link to article]

106. The Monte-Carlo Method for filtering with discrete-time observations. P. Del Moral J. Jacod & P. Protter. **Probability Theory and Related Fields**. vol. 120, no. 3, pp. 346–368 (2001). [link to article]

107. On a class of discrete generation interacting particle systems. P. Del Moral M. Kouritzin & L. Miclo. **Electronic Journal of Probability**, vol.6, no. 16, 26 pp. (2001). [link to article]

108. On the stability of interacting processes with applications to filtering and genetic algorithms. P. Del Moral & A. Guionnet. **Annales de l'Institut Henri Poincaré Probab. & Statist.**, vol. 37, No. 2, pp. 155-194 (2001). [link to article]

109. Modeling genetic algorithms with interacting particle systems. P. Del Moral L. Kallel & J. Rowe. Revista de Matematica, Teoria y aplicaciones. vol.8, no. 2 (2001). [link to article]

110. On the applications of Maslov optimization theory. P. Del Moral & M. Doisy. Russian Mathematical Notes. vol. 69, No.2, p. 232–244 (2001). [link to article]

111. Branching and Interacting Particle Systems Approximations of Feynman-Kac Formulae with Applications to Non-Linear Filtering. P. Del Moral & L. Miclo. Séminaire de Probabilités Lecture Notes in Mathematics, vol. 34, no. 1729, pp. 1-145 (2000). [link to article]

112. A Moran particle system approximation of Feynman-Kac formulae. P. Del Moral & L. Miclo. **Stochastic Processes and their Applications**, vol. 86, no.2, pp. 193-216 (2000). [link to article]

113. Convergence and the Applications of Empirical Processes for Interacting Particle Systems and Nonlinear Filtering. P. Del Moral & M. Ledoux. **Journal of Theoretical Probability**, vol. 13, no. 1, pp. 225-257 (2000). [link to article]

114. A Central Limit Theorem for Non Linear Filtering using Interacting Particle Systems. P. Del Moral & A. Guionnet. **Annals of Applied Probability.** vol. 9, no. 2, pp. 275-297 (1999). [link to article]

115. Discrete Filtering Using Branching and Interacting Particle Systems. D. Crisan, P. Del Moral & T.J. Lyons. Markov Processes and Related Fields. vol. 5, no. 3, pp. 293-318 (1999). [link to article]

116. Interacting Particle Systems Approximations of the Kushner Stratonovitch Equation. D. Crisan, P. Del Moral & T.J. Lyons. **Advances in Applied Probability.** vol. 31, no. 3, pp. 819-838 (1999). [link to article]

117. On the Convergence and the Applications of the Generalized Simulated Annealing. P. Del Moral & L. Miclo. **SIAM Journal on Control and Optimization**, vol. 37, no. 4, pp. 1222–1250 (1999). [link to article]

118. Maslov Idempotent Probability Calculus, part I. P. Del Moral & M. Doisy. **Probability Theory and its Applications. SIAM**, vol. 43, no.4, pp. 562-576 (1999). [link to article]

119. Maslov Idempotent Probability Calculus, part II. P. Del Moral & M. Doisy. **Probability Theory and its Applications. SIAM**, vol. 44, no.2, pp. 319-332 (1999). [link to article]

120. Measure Valued Processes and Interacting Particle Systems. Application to Non Linear Filtering Problems. **Annals of Applied Probability**, vol. 8 , no. 2, pp. 438-495 (1998). [link to article]

121. Large Deviations for Interacting Particle Systems. Applications to Non Linear Filtering Problems. P. Del Moral & A. Guionnet. **Stochastic Processes and their Applications**, vol. 78, no. 1, pp. 69-95 (1998). [link to article]

122. A Uniform Convergence Theorem for the Numerical Solving of the Non Linear Filtering Problem. P. Del Moral. **Journal of Applied Probability**. vol. 35, no.4, pp. 873-884 (1998). [link to article]

123. Particle interpretation of non-linear filtering and optimization. P. Del Moral & G. **Russian Journal of Mathematical Physics**. vol. 5 , no. 3, pp. 355–372 (1997).

124. Optimal Non-linear Filtering in GPS/INS Integration. H. Carvalho, P. Del Moral, A, Monin & G. Salut. **IEEE-Trans. on Aerospace and electronic systems**. vol. 33, no. 3, pp. 835–850 (1997). [link to article]

125. Non Linear Filtering: Interacting Particle Solution. P. Del Moral. Markov Processes and Related Fields. vol. 2, no. 4, pp. 555–580 (1996). [link to article]

126. Non-linear Filtering using Random Particles. P. Del Moral. **Theory of Probability and Its Applications SIAM** vol. 40, no 4, pp. 690–701 (1996). [link to article]

Reviewed international conferences

1. Interacting Weighted Ensemble Kalman Filter applied to Underwater Terrain Aided Navigation. C. Palmier, K. Dahia, N. Merlinge, D. Laneuville & P. Del Moral. American Control Conference (ACC), 1541-1546 (2021). [link to article]

2. Bathymetry and Atomic Gravimetry Sensor Fusion for Autonomous Underwater Vehicle. C. Palmier, K. Dahia, N. Merlinge, D. Laneuville, P. Del Moral. IEEE 24th International Conference on Information FUSION (2021). [link to article]

3. Adaptive Approximate Bayesian Computational Particle Filters for Underwater Terrain-Aided Navigation. C. Palmier, K. Dahia, N. Merlinge, P. Del Moral, D. Laneuville & C. Musso. 22th International Conference on Information Fusion, FUSION 2019, Ottawa, ON, Canada, July 2-5, 2019. IEEE, FUSION (2019). [link to IEEXplore link]

4. A Sequential Monte Carlo Approximation of the HISP Filter. D. Clark, P. Del Moral & J. Houssineau. 23rd European Signal Processing Conf. Proceedings EUSIPCO Conf. (2015). [link to article]

5. General multi-object filtering and association measure. J. Houssineau, P. Del Moral & D. E. Clark. IEEE CAMSAP. Computational Advances in Multi-Sensor Adaptive Processing (2014). [link to article]

6. On the convergence of Quantum and Sequential Monte Carlo methods. F. Giraud & P. Del Moral. Monte Carlo and Quasi-Monte Carlo Methods. Springer, Berlin, Heidelberg.

Springer Proceedings in Mathematics & Statistics, vol 65, pp. 385-398 (2014). [link to article]

7. An introduction to particle integration methods: with applications to risk and insurance. P. Del Moral, G. W. Peters & C. Vergé. Monte Carlo and Quasi-Monte Carlo Methods. Springer, Berlin, Heidelberg. Springer Proceedings in Mathematics & Statistics, vol 65, pp. 38-81 (2014). [link to article]

8. Application of a particle filter based subset simulation method to the reliability assessment of marine structure. Z. Guede, P. Del Moral, E. Tantar & A. Tantar. Structures, Safety and Reliability. vol. 2, ASME, Proc. of the 31th International Conference on Ocean, Offshore and Artic Engineering (2013). [link to article]

9. Rao-Blackwellised Interacting Markov Chain Monte Carlo for Electromagnetic Scattering Inversion. F. Giraud, P Minvielle, M Sancandi & P Del Moral. Journal of Physics. Conf. Series 386, n. 1 (2012). [link to article]

10. Comparison of implementations of Gaussian mixture PHD filters. M. Pace, P. Del Moral & F. Caron. FUSION 2010. 13th International Conference on Information. FUSION, EICC, Edinburgh (2010). [link to article]

11. Fisher Information Matrix-based Nonlinear System Conversion for State Estimation. M. Lei, P. Del Moral & C. Baehr. IEEE International Conference on Control & Automation. Proceedings of the 8th IEEE International Conference on Control & Automation (2010). [link to article]

12. Analysis of Approximated PCRLBs for Nonlinear Dynamics Using Different Moments of State Estimate. M. Lei, P. Del Moral & C. Baehr. IEEE International Conference on Control & Automation. Proceedings of the 8th IEEE International Conference on Control & Automation (2010). [link to article]

13. Nonlinear Markov chain Monte Carlo. C. Andrieu, A. Jasra, A. Doucet & P. Del Moral. ESAIM Proc. Conference Oxford sur les methodes de Monte Carlo sequentielles, pp. 79–84, vol. 19. EDP Sci., Les Ulis (2007). [link to article]

14. Convergence of the equi-energy sampler. C. Andrieu, A. Jasra, A. Doucet & P. Del Moral (2007). ESAIM Proc. Conference Oxford sur les methodes de Monte Carlo sequentielles, pp. 1-5, vol. 19. EDP Sci., Les Ulis. [link to article]

15. Sequential Monte Carlo Samplers for Rare Events. A. M. Johansen, P. Del Moral & A. Doucet. Proceedings of 6th International Workshop on Rare Event Simulation, Bamberg (2006). [link to article]

16. Some recent improvements to importance splitting. F. Cerou, P. Del Moral, A. Guyader, F. LeGland, P. Lezaud & H. Topart. Proceedings of 6th International Workshop on Rare Event Simulation, Bamberg (2006). [link to article]

17. Application of genealogical decision trees for open-loop tracking control. E. Ikonen, K. Najim, & P. Del Moral. Proc. IFAC World Congress. Proceedings of the16th IFAC World Congress, Prague (2005). [link to article]

18. Limit Theorems for multilevel splitting algorithms in the simulation of rare events. F. Cerou, P. Del Moral, F. LeGland & P. Lezaud. Proc. of the 2005 Winter Simulation Conference (2005). [link to article]

19. A genealogical decision tree solution to optimal control problems. E. Ikonen, P. Del Moral & K. Najim. Proc. IFAC. Workshop on Advanced Fuzzy/Neural Control, Oulu, Finland, vol. 37, no. 16, pp. 169–174 (2014). [link to article]

20. Asymptotic results for genetic algorithms with applications to nonlinear estimation. P. Del Moral & L. Miclo. Theoretical Aspects of Evolutionary Computing. Proc. Second EvoNet Summer School, pp. pp 439-493 Natural Computing Series, Springer (2000). [link to chapter/article]

21. On the stability of Maslov optimization processes. P. Del Moral. Proc. CDC, IEEE Conf. Proceedings XXXIV IEEE Conference on Decision and Control, New Orleans (1995).

22. Maslov Optimization Theory : Stochastic Interpretation, Particle Resolution. P. Del Moral, J.C. Noyer & G. Salut. Lecture Note in Control and Information Sciences, Springer-Verlag. 11th International Conference on Analysis and Optimization of Systems Discrete Event Systems. Ecole des mines, Sophia Antipolis. vol.199, pp. 312-318 (1994). [link to article]

Books and book chapters

- **Research books/Monographs:**

  1. An introduction to Wishart matrix moments. A.N. Bishop, P. Del Moral & A. Niclas. Foundations and Trends in Machine Learning. vol. 11, no. 2, pp 97-218 (2018). [link to NOW book]
  2. Mean field simulation for Monte Carlo integration. P. Del Moral. Chapman & Hall/CRC Press. Monographs on Statistics & Applied Probability (2013). [link to CRC book]
  3. On the concentration properties of Interacting particle processes. P. Del Moral, P. Hu & L. Wu. Foundations and Trends in Machine Learning. vol. 3, No. 3-4, pp. 225–389 (2011). [link to NOW book]
  4. Feynman-Kac formulae. Genealogical and interacting particle approximations. P. Del Moral. Springer New York. Series: Probability and Applications (2004). [link to Book]

- **Pedagogical books:**

  1. Stochastic Processes: From Applications to Theory. P. Del Moral & S. Penev. Chapman & Hall/CRC Press (2014). [link to CRC book link]
  2. Modèles et Méthodes Stochastiques. Une introduction avec applications. P. Del Moral & C. Vergé. Springer Series : Maths & Applications. SMAI, vol. 75 (2014). [link to Springer book]

3. Introduction aux Probabilités. P. Del Moral, B. Rémillard, S. Rubenthaler. Ellipses Edition (2006).
4. Simulation & Algorithmes Stochastiques. N. Bartoli & P. Del Moral. Cépaduès Edition (2001). [link to Cépaduès book]

- **Edited books:**

1. On the foundations and the applications of evolutionary computing. P. Del Moral, E. Tantar & A. Tantar. Series Studies in Computational Intelligence, Springer. Studies in Computational Intelligence, vol 447. pp. 3-89 (2013). [link to article]
2. Numerical Methods in Finance. R. Carmona, P. Del Moral, P. Hu & N. Oudjane. Springer Proceedings in Mathematics. Springer Berlin, Heidelberg, vol. 12, XVII (2012). [link to Springer book]
3. Evolve : A bridge between Probability, Set Oriented Numerics and Evolutionary Computation I. E. Tantar, A. Tantar, P. Bouvry., P. Del Moral, C. A. Coello Coello, P. Legrand & O. Schutze. Springer Series: Studies in Computational Intelligence. vol. 447, No. XII (2013). [link to Springer book]
4. Evolve - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation II. O. Schutze, Carlos A. Coello Coello, A. Tantar, E. Tantar, P. Bouvry, P. Del Moral & P. Legrand. Advances in Intelligent Systems and Computing.. AISC vol. 175, Springer (2012). [link to Springer book]
5. Evolve - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation III. O. Schutze, C. A. Coello Coello, A. Tantar, E. Tantar, P.l Bouvry, P. Del Moral & P. Legrand. Springer, Studies in Computational Intelligence (2014). [link to Springer book]
6. Evolve - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation IV. : Michael Emmerich, Andre Deutz, Oliver Schuetze, Thomas Bäck, Emilia Tantar, Alexandru-Adrian Tantar, Pierre Del Moral, Pierrick Legrand, Pascal Bouvry & Carlos A. Coello. International Conference Held at Leiden University, July 10-13 (2013). [link to Springer book]
7. Numerical Methods in Finance : R. Carmona, P. Del Moral, P. Hu & N. Oudjane. Springer New York, Series: Proceeding in Mathematics (2012). [link to Springer book]

- **Book chapters:**

1. An introduction to particle methods in finance. R. Carmona, P. Del Moral, P. Hu & N. Oudjane. Springer Proceedings in Mathematics. Numerical Methods in Finance, Springer New York, Series: Proceeding in Mathematics (2012). [link to article]
2. Monte Carlo approximations of american option that preserve monotonicity and convexity. P. Del Moral, B. Remillard & S. Rubenthaler. Numerical Methods in Finance. vol.12, Numerical Methods in Finance, Springer New York (2012). [link to article]
3. Probabilistic safety analysis of the collision between a space debris and a satellite with an island particle algorithm. C. Verge, J. Morio, P. Del Moral & J.C Dolado

Perez. Space Engineering. Modeling and Optimization with Case Studies, vol. 114, G. Fasano and J.D. Pinter (Eds). Springer (2016). [link to Springer book]

4. Particle association measures and multiple target tracking. P. Del Moral & J. Houssineau. Springer Briefs Spatial-Temporal Modelling. Editors: G.W. Peters & T. Matsui, SpringerBriefs in Statistics, Springer, Tokyo (2015). [link to article]
5. A Mean Field Theory of Nonlinear Filtering. P. Del Moral, F. Patras & S. Rubenthaler. Oxford Handbook of Nonlinear Filtering. Eds D. Crisan and B. Rosovsky. Oxford University Press (2011). [link to book & chapter]
6. Interacting path systems for credit portfolios risk analysis. P. Del Moral & F. Patras. Credit Risk Frontiers. Wiley & Bloomberg Press. Subprime Crisis, Pricing and Hedging, CVA, MBS, Ratings, and Liquidity, ISBN: 978-1-576-60358-1 (2011). [link to book & chapter]
7. Sequential Monte Carlo for Bayesian Computation. P. Del Moral, A. Doucet & A. Jasra. Oxford University Press Bayesian Statistics 8 (2006). [link to article]
8. Branching and interacting particle interpretation of rare event probabilities. P. Del Moral & P. Lezaud. Stochastic Hybrid Systems. Springer-Verlag, Heidelberg. Theory and Safety Critical Applications, eds. H. Blom and J. Lygeros (2006). [link to article]
9. Large deviations for interacting processes in the strong topology. D.A. Dawson & P. Del Moral. Statistical Modeling and Analysis for Complex Data Problem. P. Duchesne and B. Rémillard Editors, pp. 179–209, Springer (2005). [link to article]
10. Filtering of Images for Detecting Multiple Targets Trajectories. I. Gentil, B. Rémillard & P. Del Moral. Statistical Modeling and Analysis for Complex Data Problem. P. Duchesne and B. Rémillard Editors, pp. 267-280, Springer (2005). [link to article]
11. The Monte-Carlo Method for filtering with discrete time observations. Central Limit Theorems. P. Del Moral & J. Jacod. The Fields Institute Communications. Numerical Methods and Stochastics, Ed. T.J. Lyons, T.S. Salisbury, American Mathematical Society (2002). [link to article]
12. Interacting Particle Filtering With Discrete Observations. P. Del Moral & J. Jacod. Sequential Monte Carlo Methods in Practice. Statistics for Engineering and Information Science, pp. 43-77, Springer. Eds. A. Doucet, J. F. G. de Freitas, N. J. Gordon (2001). [link to article]
13. Interacting particle filtering with discrete-time observations: asymptotic behaviour in the Gaussian case. P. Del Moral & J. Jacod. Stochastics in finite/infinite dimensions. Trends in Mathematics, Birkhauser, pp. 101-123. Eds. Hida T., Karandikar R., Kunita H., Rajput B., Watanabe S. and Xiong J. (2001). [link to article]
14. Maslov Optimization Theory: Topological Aspects. P. Del Moral. Idempotency. Editor J. Gunawardena, Cambridge University Press, Publications of the Newton Institute, pp. 354-383 (1998). [link to book at Cambridge Univ. Press]
15. Random particle methods in (max,+) optimization problems. P. Del Moral & Salut G. Idempotency. Editor J. Gunawardena, Cambridge University Press, Publications of the Newton Institute, pp. 383-392 (1998). [link to book at Cambridge Univ. Press]

16. Maslov Optimization Theory: Optimality Versus Randomness. P. Del Moral (1997). Appendix of the book : Idempotency Analysis and its Applications. V.N. Kolokoltsov and V.P. Maslov, pages 243-302, vol. 401, Kluwer Academic Publishers, Dordrecht, Boston, London, Mathematics and its Applications.

National journals

1. A Backward Ito-Ventzell formula with an application to stochastic interpolation. P. Del Moral & S. S. Singh. C.R. Acad. Sci. Paris, 358 (7), 881-886 (2020). [link to article]

2. A duality formula for Feynman-Kac path particle models. P. Del Moral, R. Kohn & F. Patras. C.R. Acad. Sci. Paris. vol. 353, no. 5, pp. 465-469 (2015). [link to article]

3. A new class of interacting Markov chain Monte Carlo methods. P. Del Moral & A. Doucet. C.R. Acad. Sci. Paris. vol. 348, no. 1-2, pp. 79-83 (2010). [link to article]

4. On Laplace-Varadhan's integral lemma. P. Del Moral & T. Zajic. C.R. Acad. Sci. Paris. vol. 334, no. 8, pp. 693–698 (2002). [link to article]

5. On the stability of Measure Valued Processes with Applications to filtering. P. Del Moral & A. Guionnet. C.R. Acad. Sci. Paris. t. 329, Serie I, pp. 429-434 (1999). [link to article]

6. Nonlinear filtering: Interacting particle resolution. P. Del Moral. C.R. Acad. Sci. Paris. t. 325, Serie I, pp. 653-658 (1997). [link to article]

7. Nonlinear Filtering using Monte Carlo Particle methods. P. Del Moral & G. Salut. C.R. Acad. Sci. Paris. t. 320, serie I, pp. 1147–1152 (1995).

8. Resolution particulaire et traitement non lineaire du signal : Application radar/sonar. P. Del Moral, J.C. Noyer & G. Salut. Revue du Traitement du Signal, vol. 12, no. 4, pp. 287–300 (1995).
[link to article]

Reviewed national conferences

1. Particle Methods: An introduction with applications. P. Del Moral & A. Doucet. ESAIM Proceedings, Journées MAS 2012, vol. 44, Jan. 2014. [link to article]

2. Méthodes Monte Carlo Séquentielles Pour l'Analyse Spectrale Bayesienne. M. Davy and P. Del Moral & A. Doucet. Proc. XIX Colloque GRETSI (2003). [link to article]

3. Traitement non-linéaire du signal par réseau particulaire: Application RADAR. P. Del Moral, J.C. Noyer G. Rigal & G. Salut Colloque GRETSI XIV. Traitement du Signal et des Images, Juan les Pins, pp. 399-402 (1993). [link to article].

Research reports and publications under review

1. Stability of Schrödinger bridges and Sinkhorn semigroups for log-concave models. P. Del Moral. ArXiv:2503.15963, 20th March (2025).

2. On the contraction properties of Sinkhorn semigroups. O.D. Akyildiz, P. Del Moral, J. Miguez. ArXiv:2503.09887, 12th March (2025).

3. Gaussian entropic optimal transport: Schrödinger bridges and the Sinkhorn algorithm. O.D. Akyildiz, P. Del Moral, J. Miguez. ArXiv:2412.18432, 24th Dec. (2024).