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Collana	Encyclopedia of mathematics and its applications ; ; 104
Altri autori (Persone)	LakshmivarahanS DhallSudarshan Kumar <1937->
Disciplina	511.8
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Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Synopsis; 2. Pathways into data assimilation: illustrative examples; 3. Applications; 4. Brief history of data assimilation; 5. Linear least squares estimation: method of normal equations; 6. A geometric view: projection and invariance; 7. Nonlinear least squares estimation; 8. Recursive least squares estimation; 9. Matrix methods; 10. Optimisation: steepest descent method; 11. Conjugate direction/gradient methods; 12. Newton and quasi-Newton methods; 13. Principles of statistical estimation; 14. Statistical least squares estimation; 15. Maximum likelihood method; 16. Bayesian estimation method; 17. From Gauss to Kalman: sequential, linear minimum variance estimation; 18. Data assimilation-static models: concepts and formulation; 19. Classical algorithms for data assimilation; 20. 3DVAR - a Bayesian formulation; 21. Spatial digital filters; 22. Dynamical data assimilation: the straight line problem; 23. First-order adjoint method: linear dynamics; 24. First-order adjoint method: nonlinear dynamics; 25. Second-order adjoint method; 26. The ADVAR problem: a statistical and a recursive view; 27. Linear filtering - Part I: Kalman filter; 28. Linear filtering-part II; 29. Nonlinear filtering; 30. Reduced rank filters; 31. Predictability: a stochastic view; 32. Predictability: a deterministic view; Bibliography; Index.

Dynamic data assimilation is the assessment, combination and synthesis of observational data, scientific laws and mathematical models to make predictions about how a complex physical system will behave.
