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Nota di contenuto	The confrontation of mean-field theories with numerical simulations -- On numerical studies of solar/stellar convection -- Turbulent Convection: A New Model -- Large scale convection in stars : Towards a model for the action of coherent structures -- Magnetoconvection patterns in rotating convection zones -- Stellar convection as a low Prandtl number flow -- Convective overshoot as a source of helicity -- Topological pumping in the lower overshoot layer -- Diffusion of particles, heat and magnetic fields in compressible turbulent media -- The spatial structure of homogeneous turbulence at high Reynolds number -- Compressible MHD in spherical geometry -- The role of overshoot in solar activity: A direct simulation of the dynamo -- Vector potential magnetic null points -- Magnetic tubes in overshooting compressible convection -- Convective cores in stellar models -- Rotational effects on Reynolds stresses in the solar convection zone --

Stable and unstable solutions of the nonlinear dynamo problem -- Nonlinear nonaxisymmetric dynamos for active stars -- Waves of Solar Activity -- Non-steady global magnetic fields in kinematic theory -- Asymptotic methods in the nonlinear mean-field dynamo -- Fractal flux tubes of the solar magnetic field -- ??-dynamos -- Fossil magnetic fields and activity of young stars -- The sun's internal differential rotation from helioseismology -- ?-effect, meridional flow and the differential solar rotation -- Differential rotation as an axisymmetric resonant mode of convection -- The solar internal rotation and its implications -- The toroidal magnetic field inside the Sun -- The transfer of large-scale magnetic field by radial inhomogeneity of the material density in the rotating convection zone -- Diagnostics of the solar dynamo using the observed pattern of surface magnetic fields -- The large-scale magnetic field in the global solar cycle: observational aspects -- Evolution of large and small scale magnetic fields in the sun -- The solar dynamo -- A topological model of the solar magnetic field reversals -- Solar internal rotation, the boundary layer dynamo and latitude distribution of activity belts -- Solar rotation over solar cycle 21 -- Sun-as-a-star: Its convective signature and the activity cycle -- The hel ?10830 Å line as an indicator of the chromospheric and coronal activity of the sun -- The rotational modulation of ca II K in the sun -- The prolonged minima and maxima of solar activity -- The longer term evolution of magnetic field and mass flow in a decaying active region -- The main component analysis of the longitudinal distribution of solar activity -- Fe I line asymmetries and shifts caused by pressure broadening -- Rotation of large scale patterns on the solar surface as determined from filament and millimeter data -- Large scale patterns on the solar surface indicated by microwave observations -- The solar corona over the recent saros -- The history of activity of the Sun and its rotational period on the ZAMS -- The differential rotation and evolution of spots on UX Arietis from a sequence of Doppler images -- The art of surface imaging -- Surface imaging of El Eri -- Towards magnetic images of rapidly rotating late-type stars -- Chromospheric surface structures on El Eridani and HD 199178 -- Activity, colour anomalies and temperature determination in solar-type stars -- Dynamo action in evolved stars -- The boundary between the magnetic fields of ap stars and the fields of solar-type stars -- Doppler mapping of CP-star surfaces with weak and strong magnetic fields -- Temperature variations on the surface of the Si-star CU Virginis -- Learning about stellar dynamos from long-term photometry of starspots -- Starspot activity on short-period RS CVn stars -- Variations in spottedness of photosphere and chromosphere of the flare star EV Lac -- Surface inhomogeneities on the W UMa star AC Bootis -- Long-term starspot behavior of BY Dra and EV Lac -- The spot activity of FK Comae Berenices -- On the existence of solar-type activity in the secondary components of cataclysmic variables -- Radial velocity variability of K giants -- Recent advances in the observation and analysis of stellar magnetic fields -- Limits on the magnetic flux of a pre-main sequence star -- Stellar zeeman analyses: Effects of multi-component atmospheres -- Multi-line Zeeman analysis -- A new technique to measure magnetic field strength in active stars -- Magnetic flux determination in late-type dwarfs -- Linear polarization and magnetic fields in cool stars -- Long-term polarimetric activity of the cool supergiant μ Cephei -- Polarimetric observations of active cool binaries -- Magnetic fields and filling factors in late-type stars: Predictions from dynamo theory -- Activity of relatively close binaries -- Two kinds of activity in late-type stars -- Ca II H and K and H?, and Li abundances in the pleiades late K main-sequence -- Is ? Boo AB a

young or an evolved system? a model atmosphere analysis -- Spectroscopic analysis of HR 1099 -- Recent advances in our understanding of chromospheric and coronal heating mechanisms -- Ca II H high-resolution spectral monitoring of active late-type dwarfs -- The onset of chromospheres in A-type stars: The altair affair -- H? and NaD line variability in RY Tauri -- He I 5876 å line in the study of chromospheric activity in F-type MS stars -- The age evolution of Ca II emission in late type stars -- Ca II H and K spectroscopy of ER Vul -- The variations of the H? line of HD199178 -- H? emission in the giant components of RS CVn systems -- Spectroscopy of southern active stars -- Full phase coverage of by Dra with the VLA -- Coronal magnetic fields of Algol binaries from microwave spectra -- On the coronal activity of RS CVn systems -- Flare rate spectra as a possibility of diagnostics of convection zones in stars -- Observations relating to stellar activity, magnetism and dynamos -- Concluding summary: Theoretical aspects.

Sommario/riassunto

The contributions in this volume report recent studies on the sun and late-type stars. Particular emphasis is placed on observations that are relevant to the question of large-scale magnetic activity, and also on the theoretical (dynamo) models for such activity. Experimental papers deal with surface imaging techniques. Explicit computer simulations of hydromagnetic turbulence give insight into the magnetic topology and associated fluid motions, especially near the base of the convection zone. In addition, mean-field dynamo models are presented. The book addresses researchers but should also Äjbe useful for graduate students.