Example 1. $w=z^{\alpha}$ gives the preceding duality law $(a+3)(A+3)=4$, $\alpha=(a+3)/2$.

Example 2. $w=e^{z}$ provides $U=e^{2Rez}$, $V=-1/|w|^2$. Hence the force field with $a=-3$ is dual to the force field with potential $e^{2x}\approx|z|^{\infty}$.

Remark. A similar duality law holds in quantum mechanics (R. Fauv, CRAc Sci Paris, 1958).

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Current trends in EPR spectroscopy

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During the past decade the field of EPR spectroscopy has seen a surge of activity reminiscent of the developments in NMR in the sixties and seventies. One sign of the vitality of this branch of spectroscopy is the recent publication of a number of texts dealing with modern instrumentation and novel applications[1–3]. (The reader is referred to these texts for further information on the developments sketched in the following paragraphs.) Another is the formation of an International EPR Society a few years ago. In the United States the importance attached to this field of research, especially its biochemical and biomedical applications, is evident from the existence of three EPR research centres[4].

Following the example set by NMR spectroscopists, a major focus of research is the application of pulsed (or time-domain) EPR methods. For many years pulsed EPR was the domain of a small number of investigators with the expertise to build their own spectrometers[5]. Developments in the field of microwave components and digital data acquisition instrumentation have considerably simplified the task of constructing sophisticated pulsed EPR machines. At the same time improvements in instrumentation have led to the development of new applications. It is a sign of the maturation of this field of research that a commercial instrument has recently become available. This should lead to a significant increase in the application of time-domain EPR in the study of paramagnetic systems.

Probably the main area of application of pulsed EPR is in electron spin echo (ESE) measurements of hyperfine couplings between unpaired electrons and nuclear spins. This has proven to be a powerful technique to get information on electronic and geometric structure of paramagnetic species in amorphous materials. Particularly noteworthy are applications in the study of the structure of metalloproteins. Time-domain EPR measurements also give information on electron spin relaxation times (T_1, T_2). Pulsed EPR measurements of relaxation times have been used in detailed studies of molecular motion of free radicals in solution. In the last few years a number of research groups have reported on the construction and applications of Fourier transform EPR spectrometers. Among other things FT EPR can be used to study transient-free radicals (*vide infra*). 2D FT EPR has been used to study motional dynamics and the kinetics of electron exchange.

Another area of interest is the construction and application of high-frequency continuous-wave (cw) and

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