Fredrick Reines and Clyde Cowan using precisely that of anti-neutrinos, was due to particles he christened neutrinos. Their hypothesis to mean the existence of momentum conservation in nuclear beta particles to rescue energy and angular had posited the existence of certain what the properties of neutrinos are. generations of experimentalists who have place of a discovery. Thus, the book can sift through huge amounts of data, have spent their entire careers patiently very difficult to execute and scientists been ahead of experiment as the latter is great reference book both for beginners and over 40 pages (!) of references to reference point. Organized in 13 well- experimental information constantly as their accounts of the complex subject with ex- sivity, USA. The authors start from the ba- sics of the field and provide up-to-date describes in separate chapters. The uni- neutrinos and atmospheric neutrinos are described in separate chapters. The uni- treated definition of solar neutrinos and atmospheric neutrinos are described in separate chapters. The uni- tified treatment of the data takes place in the framework of global three-neutrino fits with a short chapter on experiments and bounds on absolute neutrino masses. Some futuristic trends are noted in the chapter on long-baseline neutrino oscillations. As mentioned earlier, since theory has been ahead of experiment, a detailed description of masses of neutrinos in extensions of the standard model is presented. Supernova neutrinos are described in a separate chapter as well as high-energy astrophysical neutrinos. While it is common theoretical prejudice to sim- ply assume three neutrino types, the question what if there were more is also addressed in a separate chapter as well as interesting questions at the frontier of elementary particle physics. The authors conclude with summary and outlook.

The reader is taken on a tour of experimental methods and data, and through a garden of exotic models for neutrino masses. The reader would appreciate, for instance, that the solar neutrinos are asso- ciated with the MeV energy range, and the atmospheric neutrinos are with the GeV energy range. The parameters explain- ing the first problem are confirmed by so-called reactor neutrino experiments, parameters. There is no experimental information on any of these.

The book under review does a phe- nomenal job in reviewing the entire field. It points out forcefully that the subject of neutrino physics has matured and flour- ished due to the efforts of experimentalists and a variety of experiments based on sources known as reactor neutrinos, accelerator neutrinos and astrophysical neutrinos, the latter coming from solar or atmospheric neutrinos. In addition, another remarkable source is those origin- nating in supernova collapse which was first observed in 1987, thereby giving credence to several theories of supernova formation and allowing tests of those, in so far as one could compare the measured rates with those predicted by the theory. In the recent years, specialized experiments have also measured the so-called cosmogenic neutrinos arising from the pion decay produced in the reaction of highly energetic protons with the cosmic microwave background radiation.

The authors skillfully present the ma- terial in the form of basics and theoret- ical description of neutrino mixing and oscillations, and discuss among other things the important subject of matter effects. The two defining issues of solar neutrinos and atmospheric neutrinos are described in separate chapters. The uni- fied treatment of the data takes place in the framework of global three-neutrino fits with a short chapter on experiments and bounds on absolute neutrino masses. Some futuristic trends are noted in the chapter on long-baseline neutrino oscillations. As mentioned earlier, since theory has been ahead of experiment, a detailed description of masses of neutrinos in extensions of the standard model is presented. Supernova neutrinos are described in a separate chapter as well as high-energy astrophysical neutrinos. While it is common theoretical prejudice to sim- ply assume three neutrino types, the question what if there were more is also addressed in a separate chapter as well as interesting questions at the frontier of elementary particle physics. The authors conclude with summary and outlook.

The reader is taken on a tour of experimental methods and data, and through a garden of exotic models for neutrino masses. The reader would appreciate, for instance, that the solar neutrinos are asso- ciated with the MeV energy range, and the atmospheric neutrinos are with the GeV energy range. The parameters explain- ing the first problem are confirmed by so-called reactor neutrino experiments,
whereas those explaining the latter by the so-called accelerator experiments.

Of special note is the description of the high-energy astrophysical neutrinos which are explored through such novel experiments at the IceCube experiment in the South Pole that uses clear, naturally occurring ice in the icesheets of the Antarctic.

The present reviewer is also particularly impressed by the chapter on model building. Of special note is the importance given to the see-saw mechanism proposed independently by (a) P. Minkowski, (b) T. Yanagida, (c) the group of M. Gell-Mann, P. Ramond and R. Slansky and (d) R. N. Mohapatra and G. Senjanovic, which appeals to grand unified theories to produce such small masses for neutrinos. This is another example of theory being far ahead of experiment.

Although there have been phenomenal successes in the field of neutrino physics, many questions remain to be answered. In particular, future experiments will shed light on the actual mass hierarchies, since the present information is only on the mass square differences. More needs to be learnt on the issue of the mixing matrices. As mentioned earlier, the fact that neutrinos are electrically neutral implies that they could be either ‘Majorana’ (named after the romantic and tragic figure Ettore Majorana) or ‘Dirac’ (named after the eminent physicist Paul Dirac). In the event that they are Majorana, there would be no distinction between neutrinos and anti-neutrinos. Future experiments, including those that are looking for so-called neutrinoless double-beta decay will shed light on this question. Perhaps future accelerator experiments will shed light on the nature of the neutrinos. Doubtless the planned neutrino telescopes will shore up our knowledge of astrophysical and cosmogenic neutrinos. Many of these issues are touched upon in the chapter entitled ‘Summary and outlook’. In short, this exciting book takes the reader through a grand tour of the physics of neutrinos. Many of these issues are touched upon in the chapter entitled ‘Summary and outlook’. In short, this exciting book takes the reader through a grand tour of the physics of neutrinos.