

A Treatise On Quantum Theory (was: Textbook on quantum mechanics)

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Peter Craven wrote:

>

> *Could you please advise me which is the textbook that*

> *you think most correctly explains quantum mechanics.*

Not to plug new or upcoming books, but [oops too late], I've been working through the basic topics of a treatise, as per the subject header, for quite some while. The initial draft of the Prologue addresses some of the issues and also shows the general direction the treatise will be headed in.

The basic point of departure (and there are many) is to firmly cast the foundation in the realm of finite temperature physics; and closely integrate it with statistical mechanics and classical physics, itself; bringing all simultaneously under a common foundation, a' la the Landsman 1998 epitome "Mathematical Topics Between Classical and Quantum Physics".

The Big Picture

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[Stuff about Olbers' paradox --- why the sky isn't hot white --- deleted]

... Why is space black, then?

In fact, it's not.

We're bathing in the afterglow of a brilliant flash which was so enormous that even today it heats the entirety of outer space to a temperature that is 3 degrees above absolute zero [or about 5 degrees, Fahrenheit above absolute zero]; and colors outer space with a faint and, to the naked eye invisible, glow in the microwave spectrum so that it is, in fact, still not entirely black. The occurrence of the event was long ago, but is still directly in the line of sight of where we are today. In fact, it is the one and only place and time in the universe that is in the line of sight of all other places in the universe, at all other times --- visible in all directions at once.

For, you see, the visible universe is actually a projection of the past. The Earth (as well as each other place and time everywhere else) is surrounded by a nested series of spheres — exactly as apprehended by philosophers of old. But they are not spheres of substance, rather they are spheres that envelope all those places a set distance from Earth which existed a set time in the past and are, only now, becoming visible to us by their light. The sphere of radius 4.3 light years, which crosses the neighborhood of the nearest star, comprises events that are 4.3 years ago. Likewise, the projection seen of Andromeda — our nearest (regular) galaxy — is of 2,000,000 years past.

Going further out, the image seen of galaxies more distant, or other exotic objects like quasars, whose appearance steadily become more and more primitive the further out we go are of time yet more remote. Eventually you reach a point where is visible nothing more than a shell — of enormous size — of nearly uniform but diffuse glow: the Cosmic Microwave Background or CMB. That's the glow, mentioned at the outset, which still illuminates the entire universe, but only faintly.

It represents the last moment that outer space was opaque, and the first moment it became transparent. The times following form smaller spherical shells within, and all that's visible lies on one of these. The times preceding lie outside the CMB and are largely obscured by the opaqueness of outer space at these remote times. Though nearly uniform, ever so slight variations show up in the CMB — lumps and regions slightly more sparse than the surround background — that are directly tied to what later became the — visible — structure formed by the galaxies in the large: the vast network of filaments and cosmic gaps that these galaxies do (or do not) lie along.

Beyond the CMB shell lie other shells, further remote in time, and further out. They, too, are directly in the line of sight, though obscured and cloaked by the CMB. Going far enough, ultimately, one reaches the outermost shell, at which lies the earliest point in time, and the brilliant occurrence alluded to — that, which Cosmology calls the Big Bang.

But this "shell", in fact, is NOT a shell at all. It's a point! It is the same point in space and time that lies on every part of this outer shell. All directions lead to the point.

Before reaching this outermost shell, at some point along the process, the nested series of shells actually quit getting larger and larger and actually start to curve the other way around and get smaller and smaller! Though we appear to be on the inside of them, they curve the OTHER way, and we are on the outside; as are all other places and times following the moment these shells existed at. Indeed, the CMB itself may even be curved the other way around.

[Picture of the famous Medieval painting, also illustrated in Rudy Rucker's 'Infinity and the Mind' here. This shows the outermost

sphere, "Empyrean" as a single point, lying at the antipode of a hyperspherical universe — and represents one of the earliest expressions of a non-Euclidean geometry].

— to be continued —

[why this tack is taken on in the prologue will become clear in the following articles, provided I have time to post them.]