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[https://www.100test.com/kao\\_ti2020/645/2021\\_2022\\_2010\\_E5\\_B9\\_B4\\_E6\\_95\\_99\\_c73\\_645642.htm](https://www.100test.com/kao_ti2020/645/2021_2022_2010_E5_B9_B4_E6_95_99_c73_645642.htm) Relativity theory has had a profound influence on our picture of matter by forcing us to modify our concept of a particle in an essential way. ( 47 ) In classical physics, the mass of an object had always been associated with an indestructible material substance, with some “ stuff ” of which all things were thought to be made. Relativity theory showed that mass has nothing to do with any substance, but is a form energy. Energy, however, is a dynamic quantity associated with activity, or with processes. ( 48 ) The fact that the mass of a particle is equivalent to a certain of energy means that the particle can no longer be seen as a static object, but has to be conceived as a dynamic pattern, a process involving the energy which manifest itself as the particle ’ s mass. ( 49 ) This new view of particles was initiated by Dirac when he formulated a relativistic equation describing the behavior of electrons. Dirac ’ s theory was not only extremely successful in accounting for the fine details of atomic structure, but also revealed a fundamental symmetry between matter and anti-matter. It predicted the existence of an anti-matter with the same mass as the electron but with an opposite charge. This positively charged particle, now called the positron, was indeed discovered two years after Dirac had predicted it. The symmetry between matter and anti-matter implies that for every particle there exists an antiparticles with equal mass and opposite charge. Pairs of particles and antiparticles can be created if

enough energy is available and can be made to turn into pure energy in the reverse process of destruction. ( 50 ) These processes of particle creation and destruction had been predicted from Dirac ' s theory before they were actually discovered in nature, and since then they have been observed millions of times. The creation of material particles from pure energy is certainly the most spectacular effect of relativity theory, and it can only be understood in terms of the view of particles outlined above. ( 51 ) Before relativistic particle physics, the constituents of matter had always been considered as being either elementary units which were indestructible and unchangeable, or as composite objects which could be broken up into their constituent parts. and the basic question was whether one could divide matter again and again, or whether one would finally arrive at some smallest indivisible units. 答案 47.在古典物理中，某一物体的质量总是与一种不可毁灭的物质相关联。这是一种构成一切物质的“东西”。 48.某一粒子的质量相当于一定的能量，这一事实意味着该粒子不再被看作是一个静态的物体，而应该被看成是一种动态的形式，一种与能量表现为粒子质量相关的过程。 49.这一新的粒子观是由迪拉克首创的，他列出了描述电子运动行为的相对论方程。 50.粒子生成和毁灭的过程在真正被发现之前，迪拉克的理论已经对它们作出了预测，从那时起人们对此做过数百万次的观测。 51.在相对论粒子物理学诞生之前，人们一直以为物质的构成成分要么是不可毁灭和不可改变的基本单位，要么是可以分解为其构成部分的合成物。 总体分析 本文是一篇关于粒子物理理论的文章。 第一段：指出相对论改变了我们的粒子概念，从而影响了我们对物质的理

解。第二段：指出这一粒子观点是由迪拉克首创的，他的理论揭示了物质和反物质的基本对称。该理论已经得到了证实。第三段：纯能量创造物质粒子是相对论最惊人的影响。相对论观点的粒子物理学改变了人们对于物质的看法和理解。本文是一篇科普性说明文，属于正式文体。考生首要的任务是清楚地分析句子结构，并结合自己的物理常识准确把握生疏词汇，在此基础上完成翻译。本题考核的知识点：(一)被动语态。(二)定语，包括定语从句，分词作定语。(三)状语从句。100Test 下载频道开通，各类考试题目直接下载。详细请访问 [www.100test.com](http://www.100test.com)