



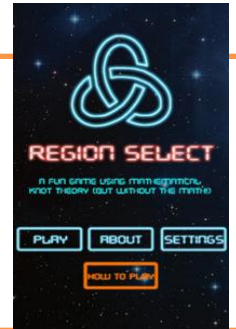
打结理论在游戏中的应用「REGION SELECT」!

“Region Select” - a game using knot theory!

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【研究的概述】

益智游戏-地区选择-是在大阪市立大学数学研究所，由河内明夫，岸本健吾，清水理佳根据打结理论的研究结果发明而成。自从去年12月发布了这个游戏的安卓应用程序以来，就已经被下载安装了1万次以上。此益智游戏倍受全世界各地的青年老少的喜欢。A puzzle game -Region Select- was invented from a study of knot theory by Akio Kawauchi, Kengo Kishimoto and Ayaka Shimizu at OCAMI. An Android application of this game was released in last December, and installed more than 10,000 times so far! Both a youth and the elderly enjoy this game all over the world!!

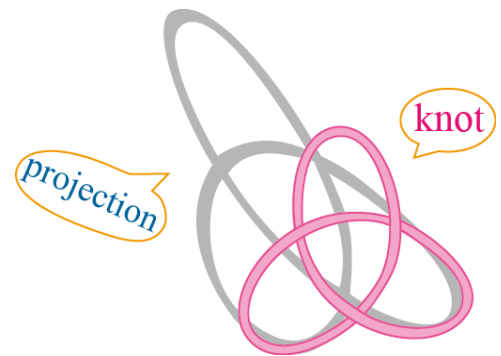


打结理论 About knot theory

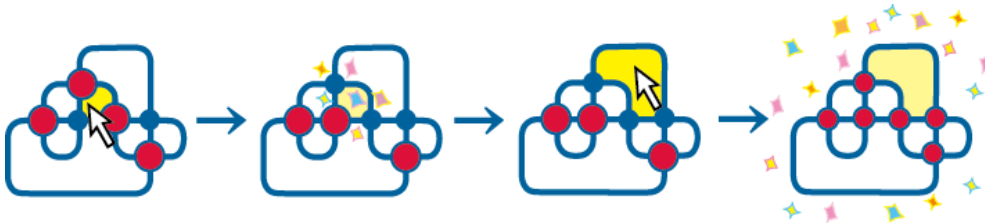
打结理论是数学的拓扑几何学的一个分支，主要研究关于扭结的绳子是否能解开，如何操作才能解开，以及存在怎样的扭结点等问题。最近，打结理论在全世界范围内得到广泛的研究和应用。它不仅在数学研究上，而且在化学，物理，生物等其他领域上的应用问题，也成为研究的热点。

Knot theory is a branch of mathematics studying tangled string knots to determine such things as whether a knot is actually tied or untied, how a knot can be untied, and what kinds of knots exist, etc.

Nowadays, knot theory is studied and used around the world not only in mathematical research but also in physics, chemistry, and biology, etc.



地区选择 Region Select 在游戏中，将使用一个有打结的投影图。并在每一个交点处都放有一盏‘灯’，当您点击了由线围成的区域时，该区域的边界上的灯就会点亮或者熄灭。在不同区域上重复这个操作，只要让所有的‘灯’都点亮了，这个游戏也就结束了。事实上，不论我们使用怎样的扭结的投影图，以及从怎样的点灯状态开始，这个游戏总是可解的。这个事实已经根据打结理论得到证明了。At the beginning there is a knot projection. Each crossing has a "lamp" which can be turned on or off by clicking on the region bordering it. The goal of the game is to light up all of the lamps by clicking on different regions. In fact, we can clear this game for any knot projection. (This fact was proved by using knot theory.)



未来发展前景 Future development

地区选择-是基于一种数学算法，但它因为既不需要数字也不需要数学语言，所以有望它有非常广泛的应用。最近利用这个游戏，开发了一种新的开关系统。同时，我们可以预见到关于幼儿教育以及在老年痴呆症的康复治疗中应该可以得到应用，并且我们已经在进行了研究了。因此，我们坚信这个游戏将会活跃在各种各样的领域之中。

“Region Select” is based on a mathematical algorithm. Because it needs neither the number nor the mathematical words, very wide applications are expected. Recently, a new switching system has been created by applying this game. Also, we study to expect that it can be used for training cognitive functions to recognize shape during rehabilitation as well as a mathematical tool of primary education. In this way, we expect and believe that this game has limitless possibilities.



Region Select for children