EURO COIN DIFFUSION

- a numerical study

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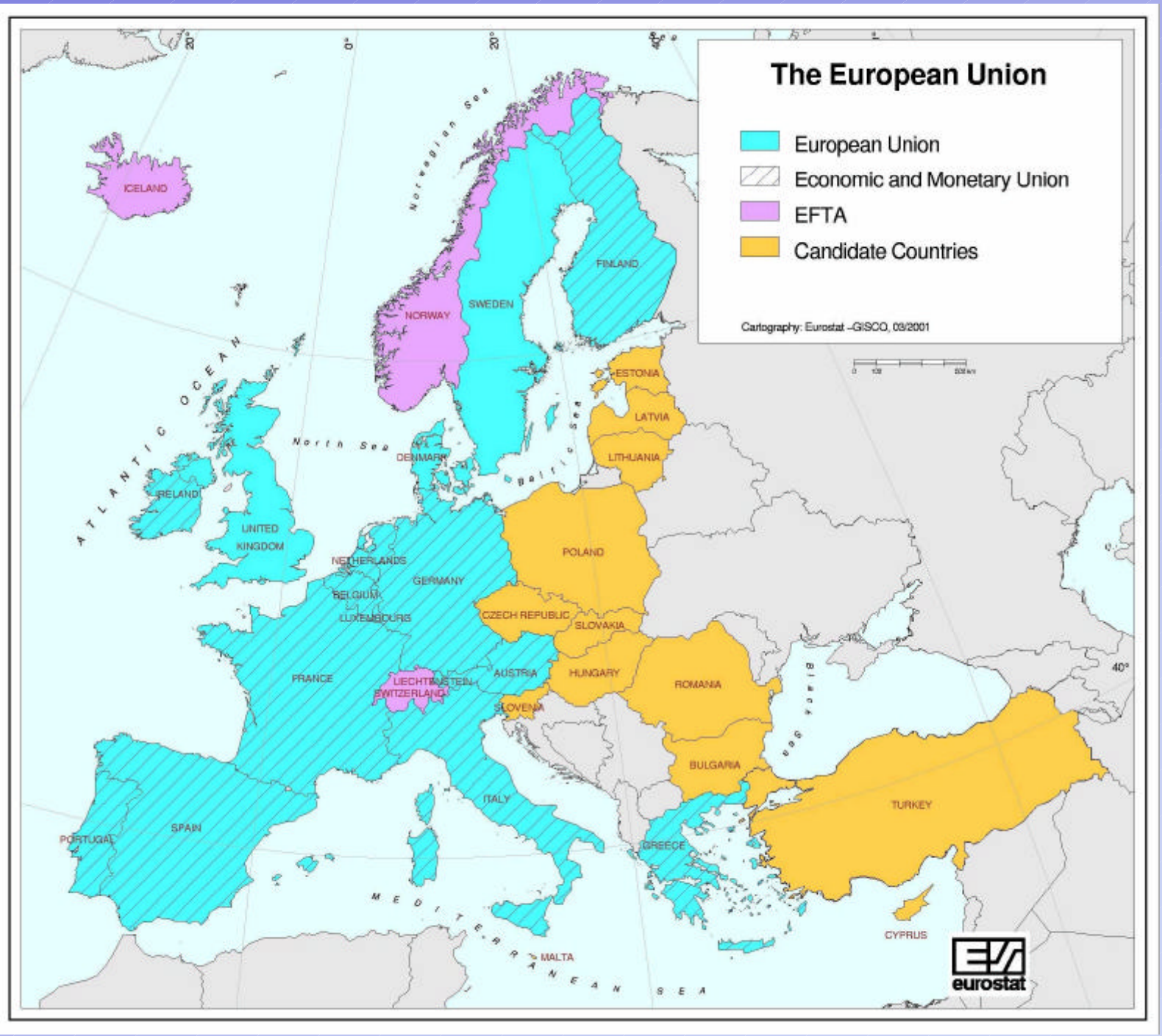
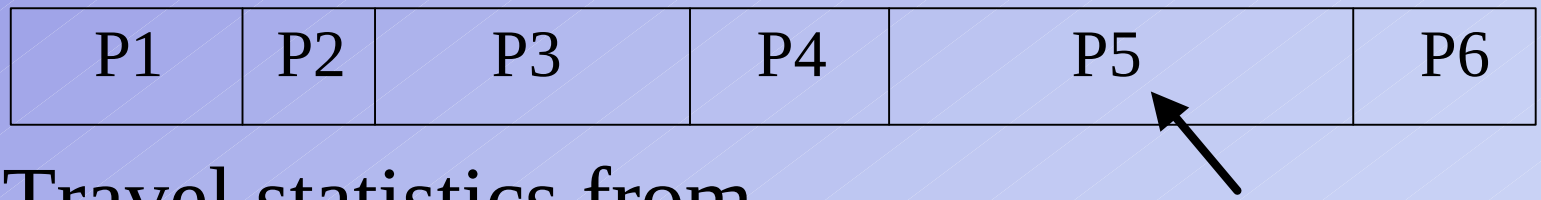

The European Union
European Union
Economic and Monetary Union
EFTA
Candidate Countries
Cartography: Eurostat –GISCO, 03/2001
ICELAND
NORWAY
SWEDEN
FINLAND
ESTONIA
LATVIA
LITHUANIA
DENMARK
IRELAND
UNITED KINGDOM
NETHERLANDS
BELGIUM
LUXEMBOURG
GERMANY
POLAND
CZECH REPUBLIC
SLOVAKIA
FRANCE
LIECHTENSTEIN
SWITZERLAND
AUSTRIA
HUNGARY
ROMANIA
SLOVENIA
BULGARIA
ITALY
SPAIN
PORTUGAL
GREECE
TURKEY
CYPRUS
MALTA
ATLANTIC OCEAN
North Sea
Norwegian Sea
Baltic Sea
Black Sea
MEDITERRANEAN SEA
40°
eurostat

THE METHOD

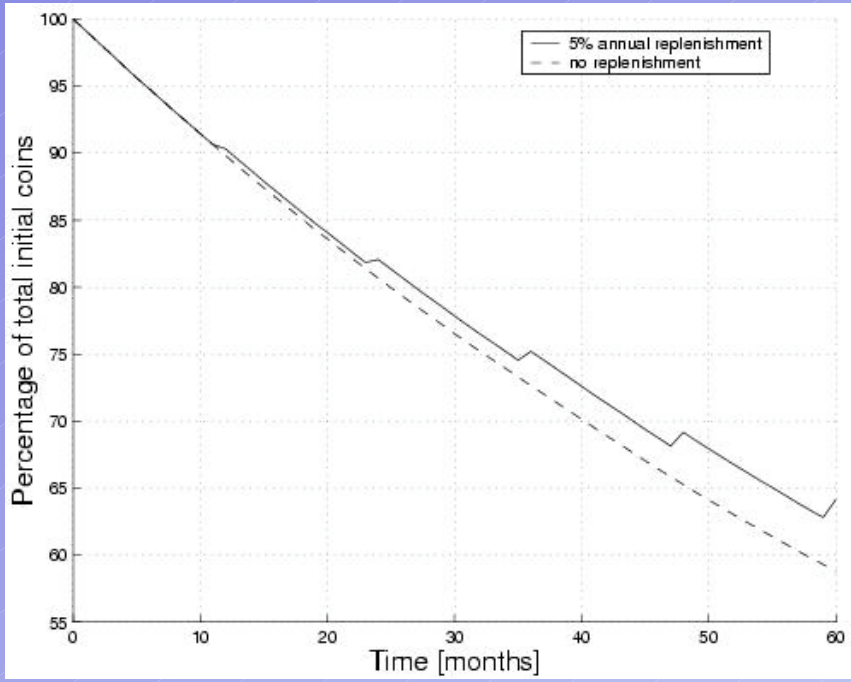
- Basic idea: coins move from one country to another with travellers.
- Residence time algorithm was used.
  - Also known as BKL (Bortz, Kalos, Lebowitz), kinetic Monte Carlo.

Transitions selected randomly according to probabilities:



- Travel statistics from European Union data (Eurostat).

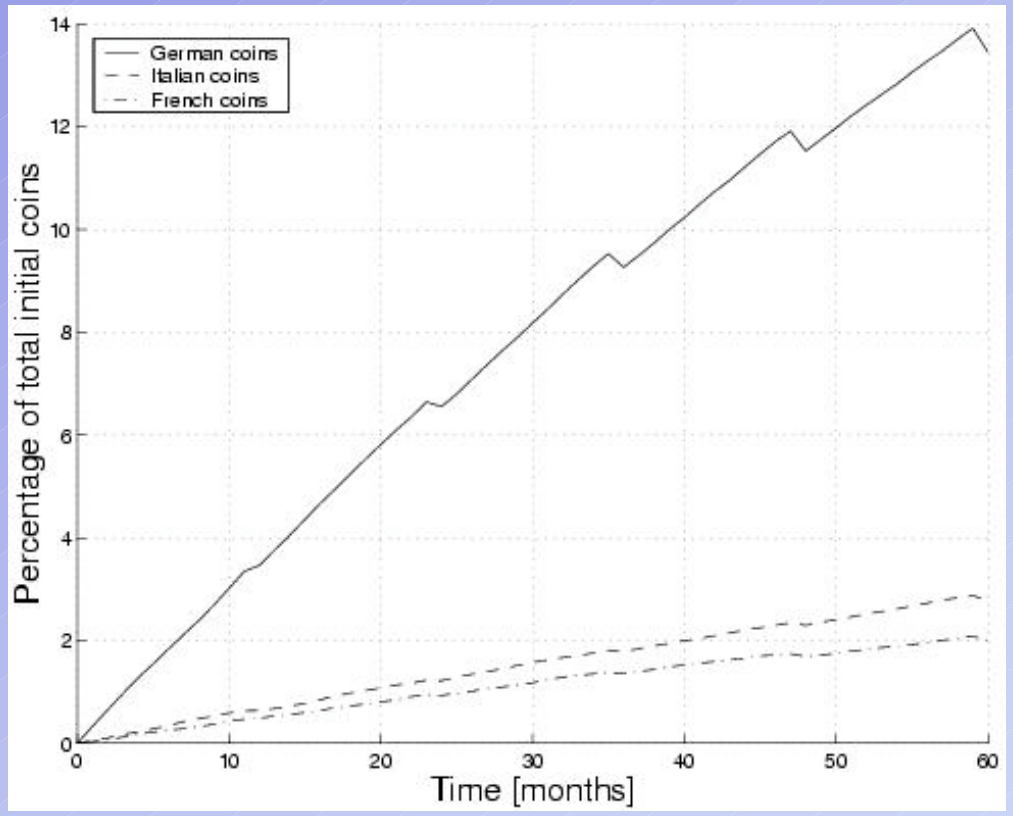
RESULTS



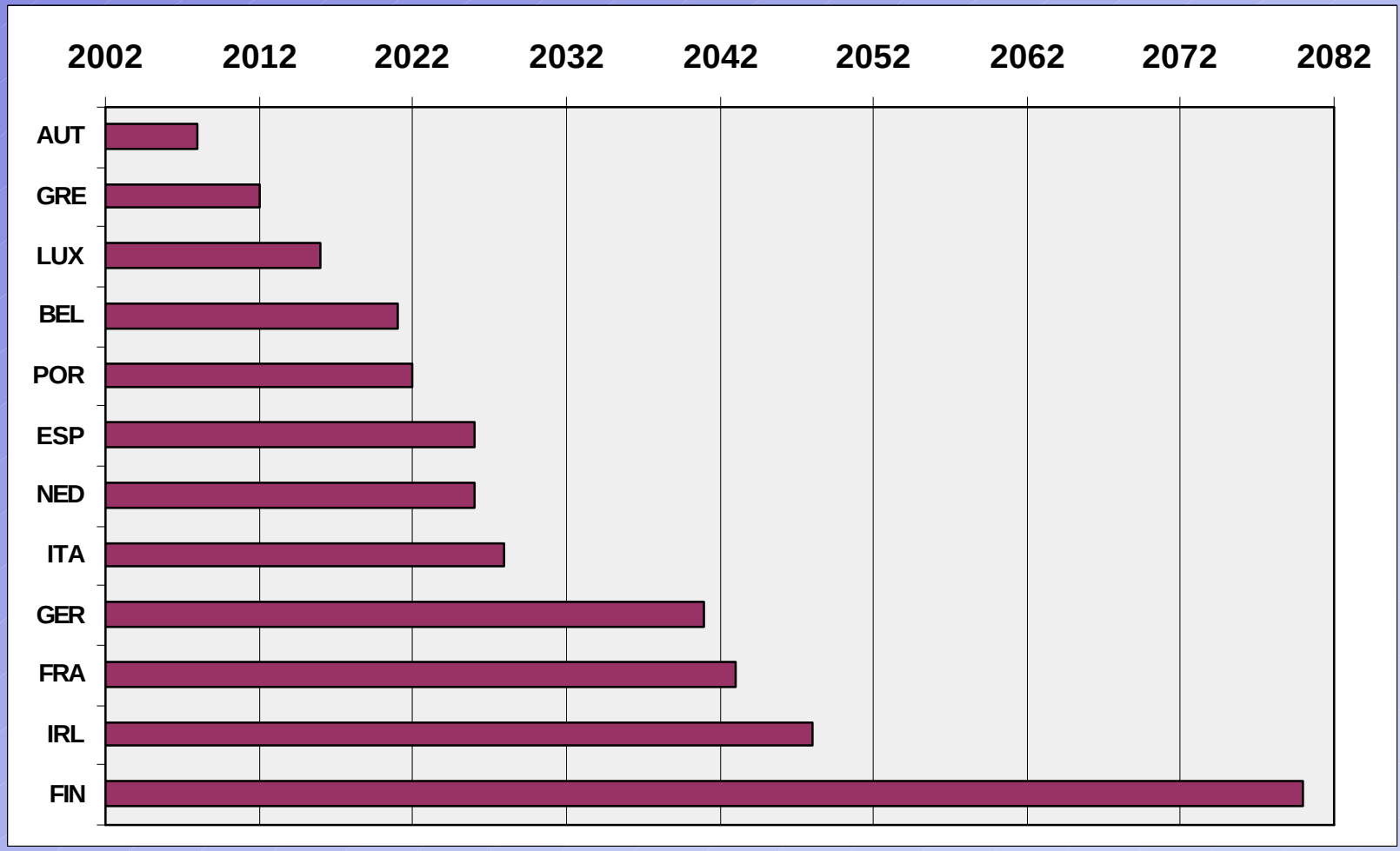
- Time evolution of the percentage of the Austrian coins in the domestic coin population.
- Effect of 5% annual replenishment.

RESULTS

- Time evolution of the percentage of the German, Italian and French coins in the Greek total coin population.



RESULTS: 50% FOREIGN



WHY?

- Diffusion **is** physics, isn't it?
- It is very important to show common public that physics methods can be used in "real life" applications.
- Out of curiosity ✍.

SPECIAL THANKS

Mikael Agopov for providing
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Summer hotel Hill for the electricity
and coffee machine…