

# NP-Completeness and Public Key Cryptosystem

## Antibes Theme

Kilgore Trout

Tralfamadorian Institute of Technology (TIT)

January 31, 2006

# Why NPC cannot be a building block for PKC.

Even though  $P \neq NP$ , NP-Completeness is *not* well suited to Public Key Cryptosystem.

- NP-Completeness only guarantee **worst-case** complexity.
- NP-Completeness deals with a **single isolated instance** of a problem.
- **Not** every NP-Complete problem **can be efficiently transformed** into a cryptosystem.

Adi Shamir, *On the Cryptocomplexity of Knapsack Systems*, STOC, 1979.

# NP-Completeness and Public Key Cryptosystem

Bergen Theme

Who? Kilgore Trout

From? Tralfamadorian Institute of Technology (TIT)

When? January 31, 2006

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NPC vs PKC  
(Berkeley)

Kilgore Trout

Introduction  
(Berkeley  
theme)

NPC vs PKC

# NP-Completeness and Public Key Cryptosystem

## Berkeley Theme

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NPC vs PKC  
(Berkeley)

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Introduction  
(Berkeley  
theme)

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## Berlin Theme

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## Copenhagen Theme

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## Darmstadt Theme

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## Dresden Theme

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## Frankfurt Theme

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## Goettingen Theme

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# NP-Completeness and Public Key Cryptosystem Hannover Theme

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## Ilmenau Theme

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## JuanLesPins Theme

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## Luebeck Theme

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## Madrid Theme

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## Malmoe Theme

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## Marburg Theme

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## Montpellier Theme

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NPC vs PKC  
(PaloAlto)

Kilgore Trout

Introduction  
(PaloAlto  
theme)  
NPC vs PKC

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## PaloAlto Theme

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NPC vs PKC  
(PaloAlto)

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Introduction  
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## Pittsburgh Theme

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## Rochester Theme

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## Szeged Theme

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