

# Dednat6: extra modules

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The code of Dednat6 — inside the directory `dednat6/` — is made of several `.lua` files that are *all* loaded by `dednat6.lua`; there is no provision yet for loading only the modules that are used in a given `.tex` file. This means that some modules that are only useful to the author of Dednat6 (Eduardo Ochs, a.k.a. “me”) are always loaded. Here is the part of the code of `dednat6/dednat6.lua` that loads them:

```
-- Code for handling and drawing ZHAs:
require "picture"      -- (find-dn6 "picture.lua")
require "zhas"         -- (find-dn6 "zhas.lua")
require "zhaspecs"    -- (find-dn6 "zhaspecs.lua")
require "tcgs"        -- (find-dn6 "tcgs.lua")
require "luarects"    -- (find-dn6 "luarects.lua")
```

Most of these extra modules were written to handle the objects described in my series of papers about “Planar Heyting Algebras for Children”, at:

<http://angg.twu.net/math-b.html#zhas-for-children-2>

Even though these modules are not useful to other people some ideas and techniques in them may be. I am preparing a video to explain them — it will be based on the “executable notes” here:

<http://angg.twu.net/dednat6/extra-modules.txt>

I am preparing the “script” and rehearsing the video but I haven’t started recording yet. This PDF *complements* the notes and the video.

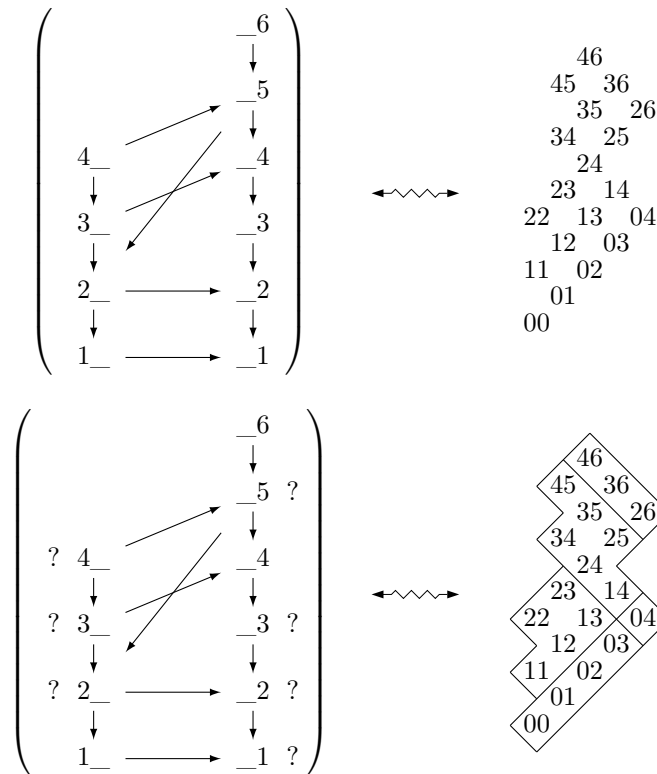
# 1 ZSets and ZFunctions

# 2 ZHAs

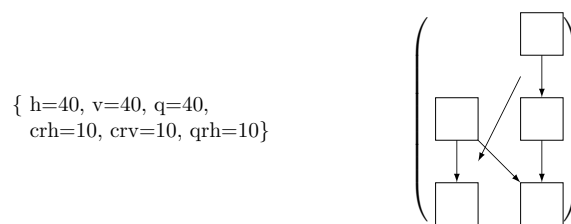
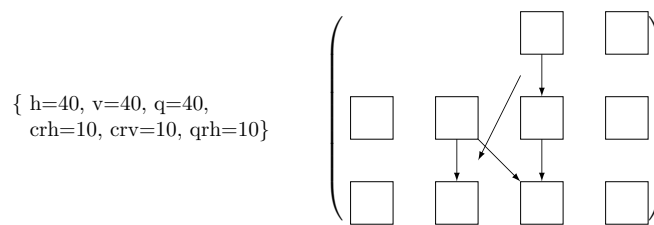
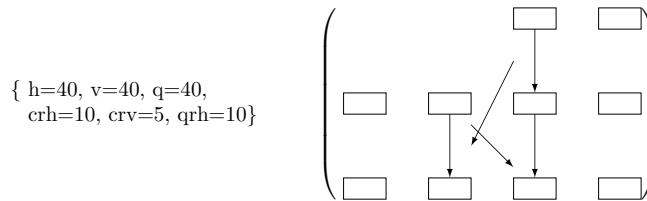
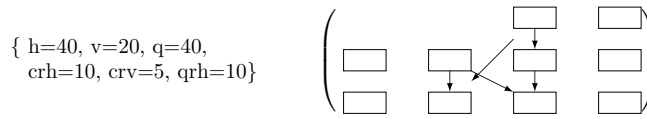
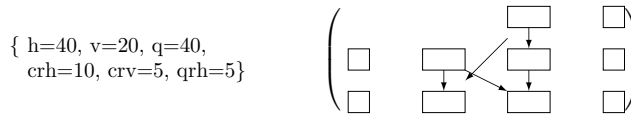
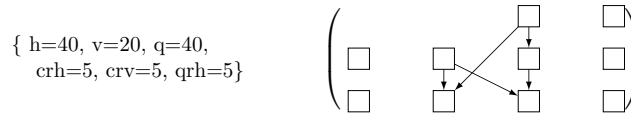
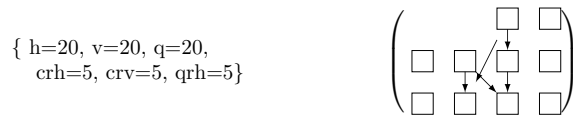
# 3 Cuts

# 4 TCGs

The file `tcs.lua` defines classes for drawing the 2-column graphs of [PH1] and [PH2] with or without question marks, and for converting these 2CGs and 2CGQs into ZHAs and ZHAs with cuts. Here's an example of what they produce:



Here's a figure showing how the dimension parameters in a `TCGDims` object work.



## 5 Underbrace2d

$$\underbrace{\underbrace{P}_0 \vee \underbrace{Q}_1}_{1} \rightarrow \underbrace{\underbrace{P}_0 \wedge \underbrace{Q}_1}_{0}$$

## 6 Luarects