# 1 Programming notes

- regr: handling of data, subset, weights, ... is subtile: weights may need to be evaluated before subset is taken.
  The elimination of unused levels might be deferred to model.frame using the argument `drop.unused.levels` – but some fitting functions (at least `survreg`) do not pass the argument on to it.
  The component `$allvars` of the `regr` result is good enough for `add1`. Therefore, the data argument is copied to the `$funcall` component of the result.
- Binary factors: have a different name in drop1 than in coef. $\longrightarrow$ Use attr($x, "assign") and attr($terms,"term.labels")
- Factors created in the formula statement are difficult to handle by plresx. They get a flag as `is.fac==2`, and fitcomp needs to know that. (Consider such strange terms as `factor(2*stelle), factor(pmin(a,b))`)

# 2 The Function `regr`

### Arguments to regr

- `family` `normal = gaussian, binomial, poisson, gamma, cumlogit, multinomial, weibull, lognormal, logistic, loglogistic, extreme, t`

  *** *add cumloglog, ... for polr*
  depends on type of response, which may be `numeric, nmatrix, binary, bincount, ordered, factor`
  *** *bincount defined by function Bincount*
  `survival`: default "family" is `ph`, but others are available, `"weibull"`,...
  Attribute `distribution` of y sets default for `family`
  `Tobit` entails `family="gaussian"` as a default
- `method` !!! changed `lm, rlm, nls, glm, polr, multinom, survreg, coxph`
  *** *coxph needs definition of residuals*

### Value of regr

Term table: Coefficients for terms with a single coefficient. Zero degrees of freedom in some case of interactions: continuous times factor (obtained in survreg)

# 3 drop1, add1, step

**NAs and subset**

NAs

- in resppmse $\longrightarrow$ shorter object$residual
- in starting model $\longrightarrow$ same
- in add1 scope

**step**

is modified. Why???

**drop1 and survreg**

`object$df` is `length(coef)+1` instead of `length(coef)-intercept`

# 4 Residuals

**Component Effects**

with interactions ?

**Fuzzy Residuals**

conditional distribution

# 5 Residual Plots

**QQ-plots**

not for glm. adequate distribution! (make sure for Gamma, weibull, ...!)

Conditional: show segments ony if conditional probability in range given by `condprobrange`

# 6 Smooths

Functions:

`smoothMM` calls `smoothM` calls `smooth`, which is `smoothRegr` by default. `smoothMM` is called from `i.plotlws` or, in the case of resdiduals from smooth (for qq and TAscale), by `plot.regr`.

- `smoothRegr` is essentially `loess`, with suitable parameter and error handling. Returns NULL if less than 8 observations are provided
- `smoothMM`: smooth for multiple x and y, needed for multivariate regression. Yields a list of lists
- `smoothM`: smooth for multiple y, generating smooths by group. Yields a list.

# 7 Documentation of Output

tit and doc.

stamp

# 8 Miscellaneous

- bookkeeping in lm

$x = model.matrix, includes
colnames= names of coef
attr(,"assign") zuordnung zu term.labels, die aber nicht da sind
attr(,"contrasts") for factors

- options ... mgp,
- draw unimportant, extended items (reference lines, smooths) first